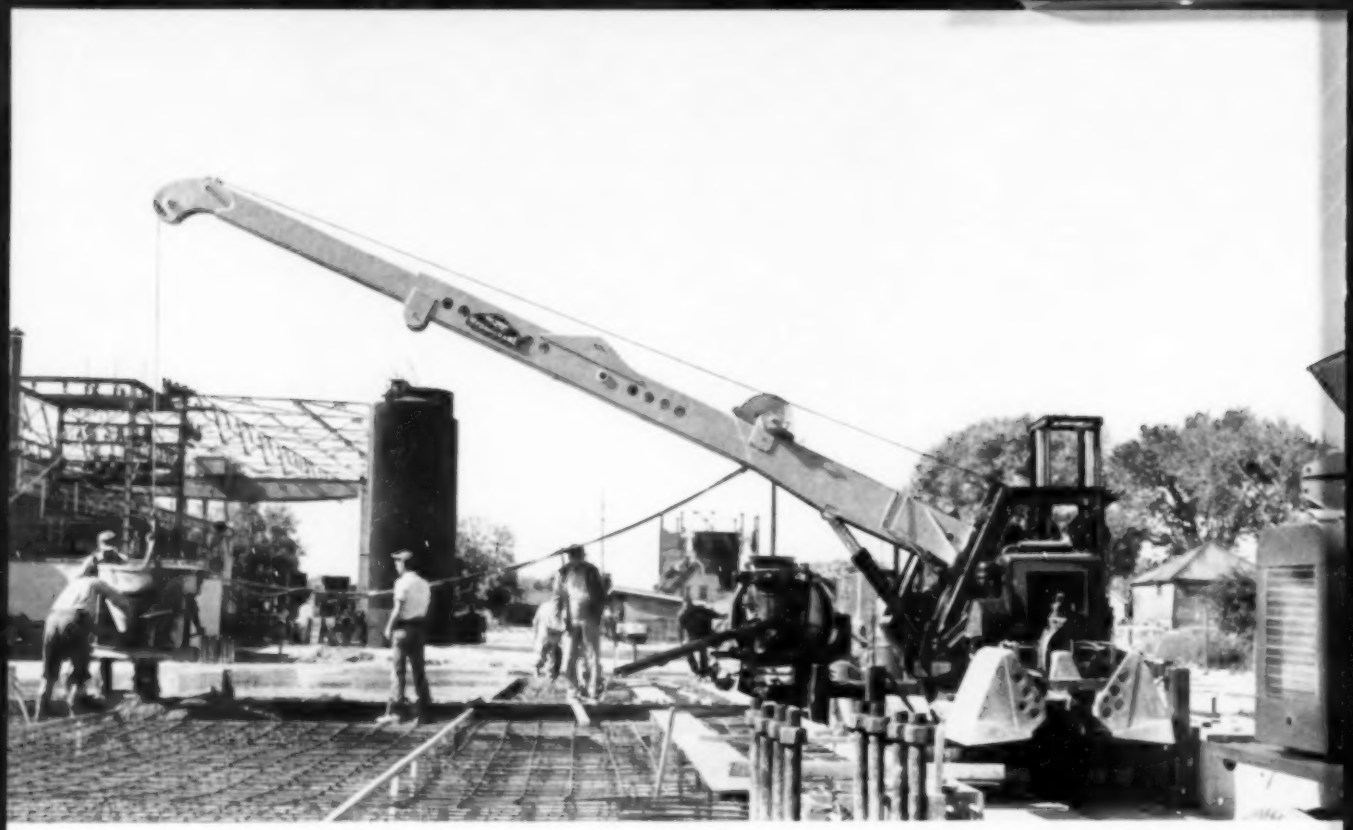
MAY
1958

Excavating Engineer

founded 1903

A 6.3-mile long killer road in Nevada's Rocky Mountains will be a double-barreled interstate highway when Isbell Construction Co., Reno, Nev., completes a $2,490,000 contract this summer. A ripper-equipped dozer pushes blasted rock off a cliff edge to a shovel loading below. In background is part of the old highway and a large rotary drill used in blast hole work. An article begins on page 17.



This Hydrocrane uses its precision control to spot a ½-yd. bucket on a pouring job at Fond du Lac, Wisconsin.

Hydrocrane's Inch-Splittin' Accuracy Speeds Up Pouring and Placing

You can move a concrete bucket or prestressed slab an inch as easy as you move it a foot — lift a full bucket as easy as you lift a pound. Hydrocrane's *all-hydraulic* "on-the-button" controls give you quick, accurate pours and placements—a money-makin' edge for you.

Four hydraulic outriggers set in seconds; form a stable, level work base. With this stability you can take full advantage of the Hydrocrane's lifting capacity—even on over-the-side lifts.

Your Bucyrus-Erie distributor is ready to show you the money-makin' edge in operating speed and precision control that belongs to the 12-ton H-5 . . . and 5-ton H-3 Hydrocranes.

240H58C

- low-cost new or used standard commercial motor truck mounting
- short tail swing for close-quarter jobs
- telescoping boom reaches in and out, over and under
- quick setups and knock-downs, open road speeds up to 50 mph

BUCYRUS ERIE HYDROCRANE

Over 50% of Hydrocranes Sold Last Year Were Repeat Orders

BUCYRUS-ERIE COMPANY • SOUTH MILWAUKEE, WISCONSIN

For draglines, shovels, scrapers, bulldozers—you can't beat Tiger Brand Wire Rope for long, low-cost service.

Changing the face of the nation's highways

with the help of USS Tiger Brand Wire Rope

On most of the big highway jobs, Tiger Brand Wire Rope is doing the heavy work. It supplies the steel "muscles" for shovels, draglines, scrapers and other earth-moving equipment.

Contractors are large users of Tiger Brand Wire Rope because this rugged steel rope lasts longer, moves more materials, and gets the job done quicker at less cost. Its Excellay Preformed construction makes it easy to handle . . . quick to install. It has less tendency to loop, kink or whip . . . and it offers highest resistance to bending fatigue.

Tiger Brand gives long, trouble-free service because it's made from the best possible steel. From ore to finished product, every step of production is rigidly controlled to guarantee top quality. And the rope is engineered to fit the job—engineered by one of the finest staffs in the country, and backed by the basic research of the United States Steel Corporation. Next time you need wire rope, rig up with Tiger Brand. It will keep your machines on the job. American Steel & Wire Division, Rockefeller Building, Cleveland 13, Ohio.

USS and Tiger Brand are registered trademarks

American Steel & Wire Division of USS **United States Steel**

Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors • Tennessee Coal & Iron Division, Fairfield, Ala., Southern Distributors
United States Steel Export Company, Distributors Abroad

"We have a very satisfied operator!"

It takes *both* men and machines to get a tough job done by contract date. That's why you get better production if a machine is good enough to satisfy the experienced operator who handles it. Asst. Supt. W. B. Siviter of Birsch Construction Corp. of Norfolk, Va., reports he has a very happy operator. It's a safe guess that the machine in question is a CAT* Motor Grader—like the rugged No. 112.

Mr. Siviter said it was his operators who recommended buying the maneuverable and dependable No. 112, shown windrowing near Smithfield, Va., on Route 10. The job of widening this narrow sand and dirt road to 16′ of hard surface called for an average of 8′ of widening. Says Supt. Siviter of his Caterpillar Motor Grader: "Does everything we expected it to do!"

Operators will be more pleased—and efficient—due to improvements on the No. 112. An adjustable seat and a taller cab with better ventilation and more window area than ever before assure less operator fatigue, more production.

The Cat No. 112 Motor Grader also has newly designed front axle components for extra strength and longer life. As before, its frame is made from special channels, with box section reinforcements to handle the toughest work conditions. And its Caterpillar Diesel Engine's reputation for lugging hard without fouling is well earned.

For details contact your Caterpillar Dealer—the same man you see for genuine replacement parts—parts you can trust.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

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NAME THE DATE... YOUR DEALER WILL DEMONSTRATE

Advertisers

IN THIS ISSUE

Allis-Chalmers Mfg. Co. 13, 15, 41
American Chain & Cable Co., Inc., Hazard Wire Rope Div. 9
American Hoist & Derrick Co., Crosby-Laughlin Div. 51
American Steel & Wire Div., U. S. Steel Corp. 1
Arcair Co. 48
Bethlehem Steel Co. 53
Bucyrus-Erie Co. 2nd Cover, 12, 49, 52
Bullard Co. 44
Business Publications Audit of Circulation, Inc. 8
Caterpillar Tractor Co. 2, 38, 39, 47, 55, 4th Cover
Colorado Fuel & Iron Corp. 50
Columbia-Geneva Steel Div., U. S. Steel Corp. 1
Crosby-Laughlin Div., American Hoist & Derrick Co. 51
Drake-Williams Mount 62
Eimco Corp., The 43
Electric Steel Foundry Co. 10
Engine-Material Handling Div., Allis-Chalmers Mfg. Co. 41
Ensign-Bickford Co. 3rd Cover
Euclid Div., General Motors Corp. 4–5
For Sale (Classified) 66–67, 68
General Motors Corp., Euclid Div. 4–5
Hayward Co., The 58
Hazard Wire Rope Div., American Chain & Cable Co., Inc. 9
Hendrix Mfg. Co. 6
Hutton Fabricating Mfg. Corp. 65
International Harvester Co. 7
Layton Co., Inc. 42
LeTourneau-Westinghouse Co. 61, 63
Mack Trucks, Inc. 34–35
Macwhyte Co. 16
Manitowoc Engineering Corp. 11
Marion Metal Products Co. 57
Marion Power Shovel Co. 59
Phoenix Products Co. 56
Roebling's Sons Corp., John A. 50
Sauerman Bros., Inc. 45
United States Steel Corp. 1
United States Steel Export Co. 1

Excavating Engineer

founded 1908

South Milwaukee, Wisconsin

CONTENTS

Volume 52 No. 5 **May 1958**

Big Highway Takes Big Equipment—by Floyd Suter Bixby 17
Nevada contractor uses 4½-yd. electric shovel and outsize mining drill to help grade 1,600,000 cubic yards of material for a mountain highway. Excavation was completed in less than eight months.

Barge-Mounted Clamshell Dredges Rich Gravel Bed—by Ray Day 24
Oregon coast gravel producer digs Umpqua River bed 60 feet below surface.

Dig Heavy Rock for Catskill Road 28
Brewster & Son, Inc. battles constant traffic in building a four-lane road in resort area.

Biggest Non-Nuclear Blast Ends Underwater Menace to Pacific Coast Ships 37
Canadian government removes hazardous underwater peaks of rock, lying in important shipping lane off British Columbia coast, in single blast using over 2,750,000 pounds of explosives.

News from the Field 38

New Form Saves Time 38
Watershed Program Opens Field for Small Contractors 40
Fast-Moving Compactor 42
Power Lines and Boom Accidents 40
Caterpillar Gets Navy Award 44

Equipment You Ought to Know About 46

Not in the Contract 54

Ex-Laffs Page 60

New Trade Literature 64

Notes from the Manufacturers 65

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EUCLID'S unmatched Rear-Dump

Over 400 Euclid Rear-Dumps were put to work on the U. S. side of the St. Lawrence Seaway—with many others on the Canadian side. The 22-ton "Euc" outnumbered all other makes and models of off-highway haulers on this huge earthmoving project.

Rear-Dump "Eucs" have proved their rugged dependability and outstanding performance on the toughest jobs. With engines of 143 to a total of 670 h.p., they have plenty of power to move big loads on steep grades and difficult hauls often encountered in highway work.

On the Iron Ranges almost 4 times as much ore is moved in "Eucs" as in all other make Rear-Dumps! In Minnesota alone more than 1300 Euclids of 15 to 50 ton capacity are hauling ore and overburden.

Dam construction demands equipment that can take the pounding of heavy excavation loaded by big shovels and draglines and keep coming back for more! "Eucs" are unequalled for job availability and for low cost production—that's why they've been the choice of dam builders for many years.

With capacities ranging from 10 to 50 tons, there's a Rear-Dump "Euc" to fit any quarry or open pit mining operation. Simple design, combined with ample power and speed, easy handling and minimum downtime results in more tonnage moved at lowest cost. Quarry body is optional on most models.

experience gives you Bonus Benefits

For 25 years Euclid has specialized in designing and building equipment for heavy, off-highway earthmoving. The dependable low cost performance of these "Eucs" has made them the standard of comparison for contractors, mines and quarries around the world. About 7 of every 10 off-highway Rear-Dumps are Euclids.

Although this unmatched experience may not be apparent when comparing specifications, it assures bonus benefits for Euclid owners—cost-cutting advantages not provided by comparable equipment. The greater use of Euclids results in faster complete field exposure to operating and maintenance characteristics under all conditions. It assures advanced design that pays off in more work-ability and minimum downtime on the job.

With Euclid's larger machine population, it's economically possible for Euclid dealers to provide more complete service facilities and ready availability of all factory engineered replacement parts. It's factors like these that enable owners to keep their "Eucs" operating at peak efficiency with unusually high availability and low production cost.

When you're considering Rear-Dumps, get facts and figures from your Euclid dealer—have him show you why ***Euclids are your best investment.***

EUCLID DIVISION GENERAL MOTORS CORPORATION, Cleveland 17, Ohio

Your Euclid Dealer offers
the best equipment investment

GM GENERAL MOTORS EUCLID

EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE

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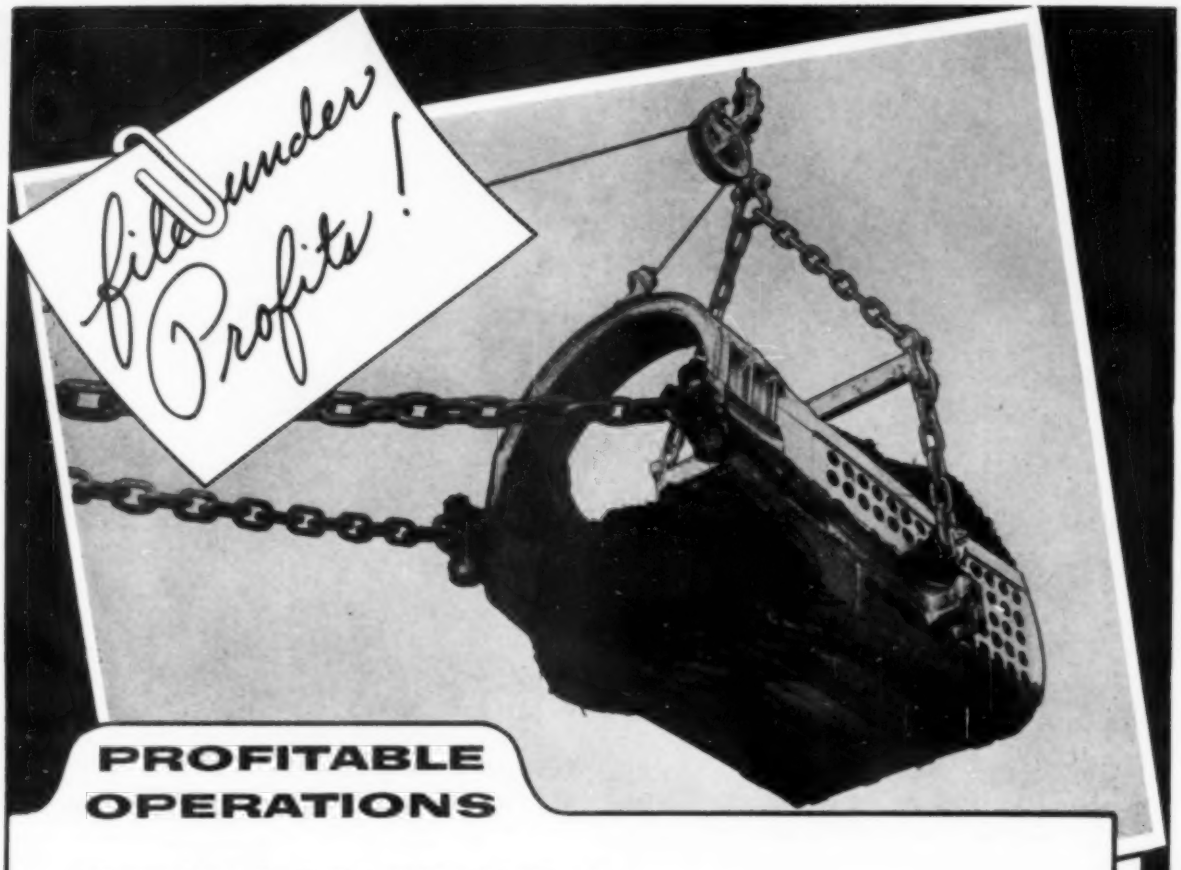

PROFITABLE OPERATIONS

Throughout the industry Hendrix Dragline Buckets are reducing maintenance costs, because they're built to last longer. It's this *extra service* from Hendrix Buckets that makes the big difference in profitable operations!

HENDRIX
DRAGLINE BUCKETS

"A Type for Every Digging Purpose"...
¼ to 40 Cubic Yards-Perforated or Solid

HENDRIX MANUFACTURING CO., Inc.
MANSFIELD, LOUISIANA

95 PAYHAULER® FLEET *speeds load-delivery 50%*

...for Central Pa. Quarry, Stripping, and Construction Co., Hazelton, Pa.

Relocating 1.9 miles of U.S. 40, east of Flintstone, Maryland, Central Pennsylvania Quarry, Stripping, and Construction Co. is moving 1,200,000 cu. yd.—90% of it rock—with five International 95 Payhaulers!

The terrain requires the deepest cut (146 feet), and highest fill (150 feet), in Maryland. The haul is 4,000 feet, with dangerous downgrades exceeding 25%.

Their Payhauler fleet is operating beside competitive haulers down the same steep haul-road. This permits accurate ton-for-ton, and penny-for-penny performance comparisons.

Here's what Job Supt. Harry G. Smith reports:

"Delivery time halved"

"The '95's' have cut costs of hauling large payloads because Torqmatic braking has cut delivery time in half over the other machines." A fully-loaded Payhauler can go down the steep grades much faster than a conventionally-braked hauler. With complete safety, too!

See how Torqmatic braking gives positive load control at any practical speed—on any grade. Try "95" get-away and climb-out speed, with the wallop of 335 turbocharged diesel "horses." Measure planetary drive axle shock-absorbing advantages. Prove production-boosting Payhauler operating ease. See your International Construction Equipment Distributor for a demonstration!

"Operators particularly like '95' operating ease, riding comfort, and maneuverability," states Job Superintendent Smith. No wonder! Controls are conveniently located. Modern power steering reduces muscle strain! Shock-swallowing seat gives "club car" riding ease!

International®
Construction
Equipment

International Harvester Co., 180 N. Michigan Avenue, Chicago 1, Illinois

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors . . . Self-Propelled Scrapers . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Haulers . . . Diesel and Carbureted Engines . . . Motor Trucks . . . Farm Tractors and Equipment.

Everybody profits ...because

you belong

in this picture!

The publisher of this magazine is often asked what kind of a man you are . . . and how many like you are receiving his magazine.

Why is he asked?

Because the *advertisers* (whose money is his chief income) insist upon knowing the types of people (by industry or profession, by title) for whom the magazine is edited — and how many are getting it.

In order to standardize on the presentation of such information to advertisers and to have its accuracy vouched for by a disinterested third party, nearly 450 publishers have joined some 200 leading advertisers and advertising agencies in a non-profit organization called Business Publications Audit.

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The BPA symbol in this magazine means that *you belong* . . . that because of your occupational interests you are qualified, in the eyes of the advertisers, to receive it.

The advertiser can thus tell whether he's getting his money's worth.

The publisher has a better sales story to prospective advertisers because his magazine is "audited."

And you, the reader, get more value from the magazine because both the advertisers and editors, knowing what your special occupation is and what your interests are, are better able to prepare advertising and editorial material that will be most informative and useful to you.

What you can do

Publishers and advertisers frequently write to magazine readers to learn what kind of articles and advertisements appeal most. Cooperate with them — will you? — by answering their questions . . . in the interest of better communications between makers and markets.

BUSINESS PUBLICATIONS AUDIT OF CIRCULATION, INC.

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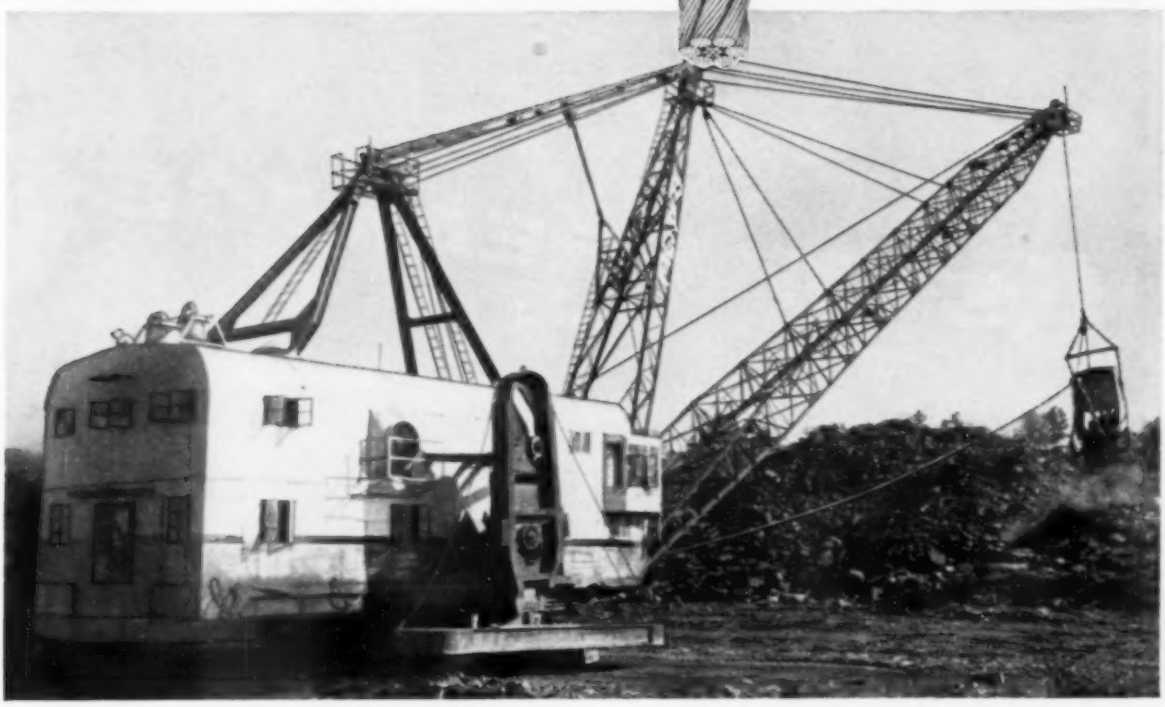
for Better Value

American Cable VHS®



VHS Dragline Stars in Alabama

Mr. C. A. Lee, Superintendent, Marigold Coals, Inc., Jasper, Alabama, says: "Our Page Model 625 Dragline is used to remove overburden averaging 36 feet of sandrock and blue slate in our strip mining operation. This is rough service. The best Improved Plow Steel Draglines we could formerly buy lasted only from 700 to 750 working hours.

"Now, however, we've switched to new TRU-LAY VHS and we are consistently averaging over 1400 hours. Because of this longer life, we've been able to cut the 'down time' of the dragline for wire rope replacement almost in half—which gives us big savings in increased production and lowered maintenance costs."

Stronger and Safer—New TRU-LAY VHS is made from a new grade of steel for wire rope. It is at least 15% stronger than Improved Plow Steel, the strongest grade formerly available. This means you can now handle heavier loads with the same diameter of line. And you get a higher factor of safety . . . more resistance to shock loads or sudden overstresses.

Tougher, More Wear Resistant—New VHS is tougher, too. It was developed especially for the toughest construction and mining applications—draglines, shovel hoist ropes, scraper and dozer cable. Since it resists abrasion and does not become "hidebound" or lose its flexibility, it lasts longer in these services.

Saves Money—The longer life you get with new TRU-LAY VHS saves you money. And even more important savings are often made through higher production or lowered maintenance costs, since the longer life of VHS reduces the "down time" of important equipment for wire rope replacement.

At Your Distributor—Your American Cable distributor has a complete selection of draglines, shovel hoist ropes, slusher ropes and winch lines of new tougher VHS in stock now. You don't need any complicated specifications to order them. Just call him today and tell him the size and diameter you want.

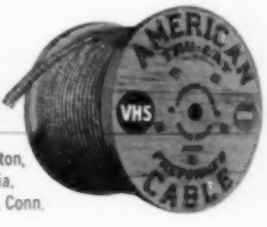
See your American Cable Distributor or write to the nearest American Chain & Cable Company Office

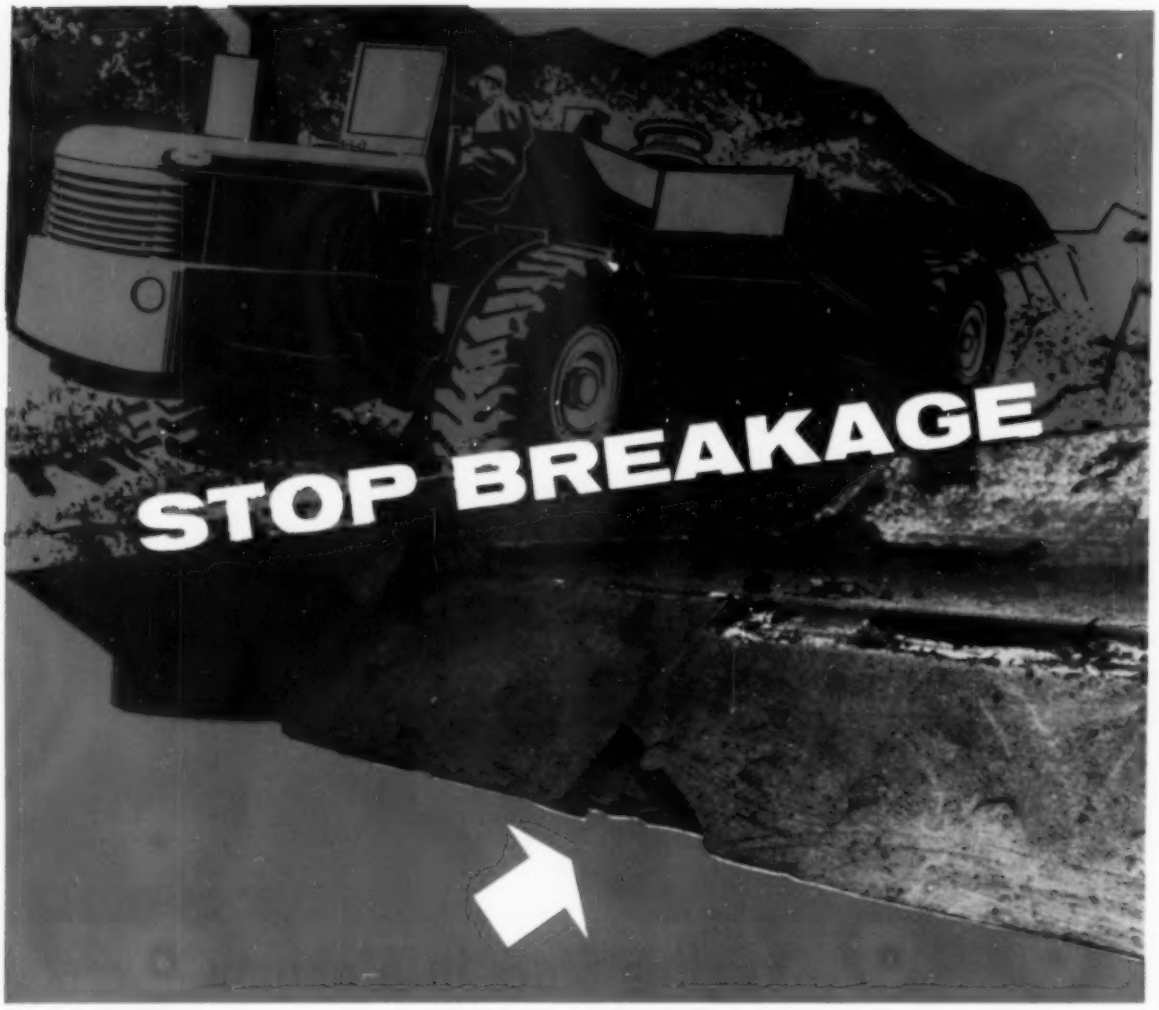
ACCO

American Cable Division

AMERICAN CHAIN & CABLE

Wilkes-Barre, Pa., Atlanta, Chicago, Denver, Houston, Los Angeles, New York, Odessa, Tex., Philadelphia, Pittsburgh, Portland, Ore., San Francisco, Bridgeport, Conn.





with ESCO® CAST 12M SCRAPER CUTTING EDGES

ESCO cast 12M Scraper Cutting Edges will stop breakage on the toughest rock jobs and will outperform any other cutting edge.

They are cast in special alloy steel, *ESCO* 12M, and carefully heat treated for extremely high shock absorbing toughness and amazing resistance to wear.

ESCO is the toughest scraper cutting edge you can buy. Toughness to resist breakage and hardness to resist abrasion go *all the way through* the cutting edge.

Whether you are working rough rock or highly abrasive material keep your scraper equipment on the job with *ESCO* Cast 12M Scraper Cutting Edges. See your nearest *ESCO* dealer for details today.

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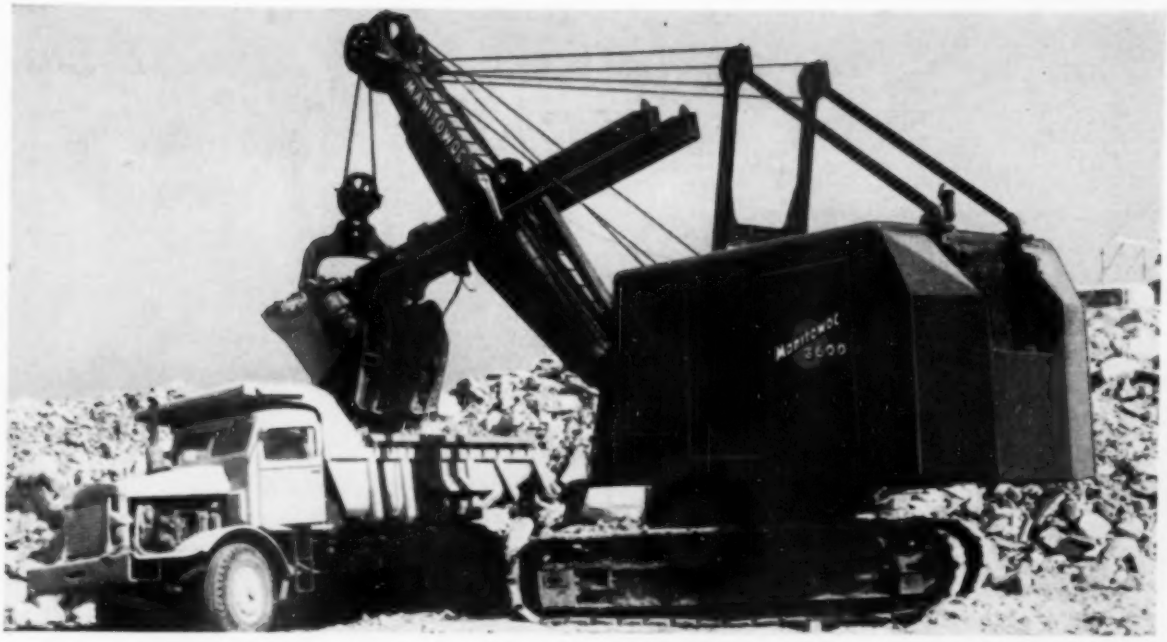

announcing the new Manitowoc model 3600 3 yard shovel

ENGINEERED TO MATCH TODAY'S BIGGER HAUL UNITS

The new 3-yard 3600 is scientifically engineered to match modern haul units. New, high-sided hauling units require a shovel with the correct shipper shaft positioning . . . the exact dipper pitch and shape to provide higher reach, cleaner dumps, faster loading.

The new 3-yard 3600 delivers full power to the dipper. Simple design eliminates power loss in the gear train . . . increases cycle speed. And for smoother power transfer the torque converter system includes a "governor" to maintain rigid control of the infinite number of power ratios . . . line pull and line speed factors are balanced against load resistance.

The new 3-yard 3600 makes hard jobs easy. Responsive air controls, smooth-acting clutches and positive-action brakes increase operator efficiency even on the toughest jobs.

The new 3-yard 3600 stays on the job longer. Box-section dipper sticks; a massive shipper shaft; a tubular boom; and a manganese dipper are among the long-life features that keep the 3600 working longer without downtime.

The new 3-yard 3600 is quickly convertible to crane, clamshell or dragline operation. Available as a 65 ton capacity crane and 3-yd. dragline. Simple boom connections assure fast field conversion.

See your Manitowoc distributor now for more facts on the new 3-yard 3600. There are dozens of other profitable features to help you land more contracts. Get more information *today!*

MANITOWOC ENGINEERING CORP., Manitowoc, Wisconsin
A SUBSIDIARY OF THE MANITOWOC COMPANY, INC.

Manitowoc

MANITOWOC ENGINEERING CORP.
MANITOWOC, WISCONSIN

CRANES	SHOVELS	DRAGLINES	TRENCH HOES
20 TON - 100 TON	1-YD. - 5½-YD.	1-YD. - 6-YD.	1-YD. - 2½-YD.

1250-B BOOSTS YARDAGE FOR WEIRTON

West Virginia Firm Adds Bucyrus-Erie Walker To Uncover Deep Coal Seams

To reach deeper coal seams, a Bucyrus-Erie 1250-B walking dragline has gone to work in Pennweir Construction Company's open pit mine. Pennweir Construction Company is a subsidiary of Weirton Construction Company. The mining property, covering some 6,000 acres, is on the West Virginia-Pennsylvania border about 25 miles southwest of Pittsburgh.

The 1250-B handles a 33-yd. bucket on a 200-ft. boom to uncover seams of bituminous Pittsburgh Eight running 58 inches thick.

This machine — christened the *Angeline* — brings a substantial yardage increase to the Weirton operation. In addition to moving overburden high and wide, it moves it economically — a tradition of Bucyrus-Erie walking draglines.

Modern front end design combining great strength with light weight permits Bucyrus-Erie walkers to swing big buckets on long booms . . . contributes to outstanding performance. Ward Leonard variable voltage control gives you extra fast acceleration and deceleration for speedy cycles. Exclusive Bucyrus-Erie walking mechanism permits smooth, fast moveups, easy maneuvering to best working position. These features plus month-after-month dependability and low maintenance are your assurance of high production.

To move big yardages economically, choose from the world's largest selection of walking draglines. Contact us for details today. Bucyrus-Erie Company, South Milwaukee, Wisconsin. 176158C

BUCYRUS ERIE *A Familiar Sign at Scenes of Progress*

He tested them all

...then bought an Allis-Chalmers HD-6G tractor shovel

Don Nourse, a leading swimming pool contractor, rented tractor shovels until he found one that appealed to his operators, his sales force and company officials. Choice of all concerned – the HD-6G.

HD-6G
72 net hp
1½-yd bucket
19,600 lb

A heaping 1½-yd bucket comes out of the excavation for a 25 x 60-ft pool. There was time before lunch to start work on a wading pool.

Here's why the HD-6G is everybody's favorite at Fiesta

Talk first with Don Nourse, President of Fiesta Pools, Southgate, California, to find how the Allis-Chalmers HD-6G came to be selected as Number 1 production machine. Don's company is the nation's second largest swimming pool builder. Don tells how Fiesta rented tractors before buying their own unit. After trying them all, he's convinced there is nothing available to touch the HD-6G for excavating pools.

Jack Sweitzer runs the HD-6G And he's convinced it's the best machine he's ever been on. Jack now digs an average of two pools a day – and that's *double* the capacity of any excavating equipment they used in the past.

Roy M. Pederson, Vice-President responsible for sales at Fiesta, will tell you their new HD-6G has already added to company sales volume because of its ability to increase production.

Robert E. Franks, Vice-President and Production Manager, says their HD-6G is the first of several purchases of Allis-Chalmers machines. In his opinion, it has proved itself a great asset on their type of operation.

If you're not already using an Allis-Chalmers tractor shovel, you'll be convinced the HD-6G can do the best job for you when your dealer shows you one – *in action – on your job.* Call him today! Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

Look ahead...*move ahead*
...and stay ahead with ALLIS-CHALMERS

"Got A Load On Your Mind? I Haven't"

Nothing gives employees a more luxurious, satisfied feeling than that of financial security. And nothing is easier for them to achieve when you provide the convenience of automatic Payroll Savings Plan.

EVERYBODY BENEFITS

Security breeds confidence—and confidence stimulates job interest and results in steadier people who are far more efficient in their work. Receiving those crisp Bonds at regular intervals along with their paycheck is an added inducement for employees to stay on the job.

Moreover, when you install the Payroll Savings Plan in your company, you promote not only the security of your personnel but the security of your company and your country. Over forty million Americans have over 40 billion dollars invested in United States Savings Bonds—a backlog of purchasing power for the future.

EASY TO INSTALL

If your company does not now have a Payroll Savings Plan, or if employee participation is less than 50%, a letter to: Savings Bonds Division, U. S. Treasury Department, Washington, D. C. will bring prompt assistance from your State Director. He will provide application cards, promotional material, and as much personal help as you need.

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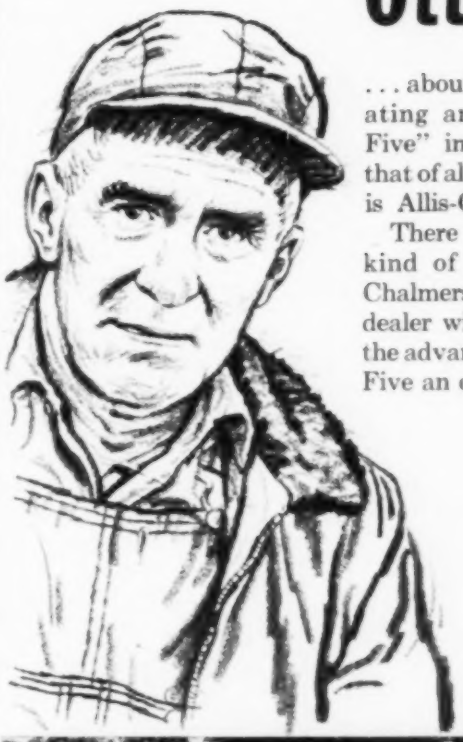
EXCAVATING ENGINEER

Ask Operator Otto Nikoley



. . . about motor graders. He's operating an Allis-Chalmers "Forty Five" in Iowa. Otto will tell you that of all types of graders, his choice is Allis-Chalmers every time.

There are good reasons for this kind of enthusiasm. Your Allis-Chalmers construction machinery dealer will be glad to demonstrate the advantages that make the Forty Five an operator's favorite.

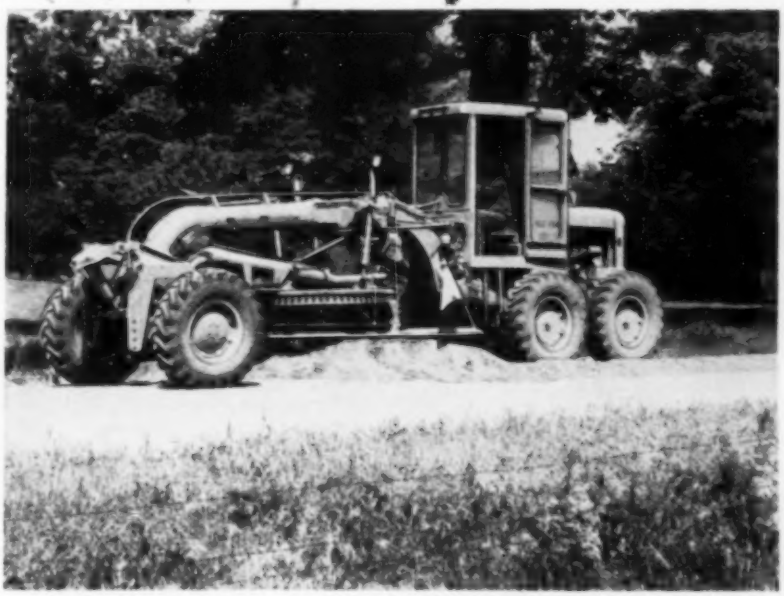
Tough road duty tests operator and machine

Otto Nikoley, Alta, Iowa, works full time maintaining roads.

Eight months a year, he and the Allis-Chalmers Forty Five motor grader work a program of finishing dirt and gravel roads. An average of three passes is all that's required to finish most of his jobs. During winter months, the grader is still productive. Equipped with snowplow, the machine is busy keeping roads open and traffic on the move.

Otto and the Forty Five work well together. There's plenty of power at hand to do the job. The Forty Five is easy operating, too. The platform is roomy and the deck is clear. Visibility is excellent all around, sitting or standing. And the blade's controls can't kick back. When Otto moves the lever, toggle engages or releases clutches surely, without wrist-snapping backlash.

Put your men on Allis-Chalmers motor graders . . . preferred by more operators, bought by more owners every year. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.



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120 brake hp • 6 speeds forward • 3 speeds reverse • 23,800 lb

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...and stay ahead with **ALLIS-CHALMERS**

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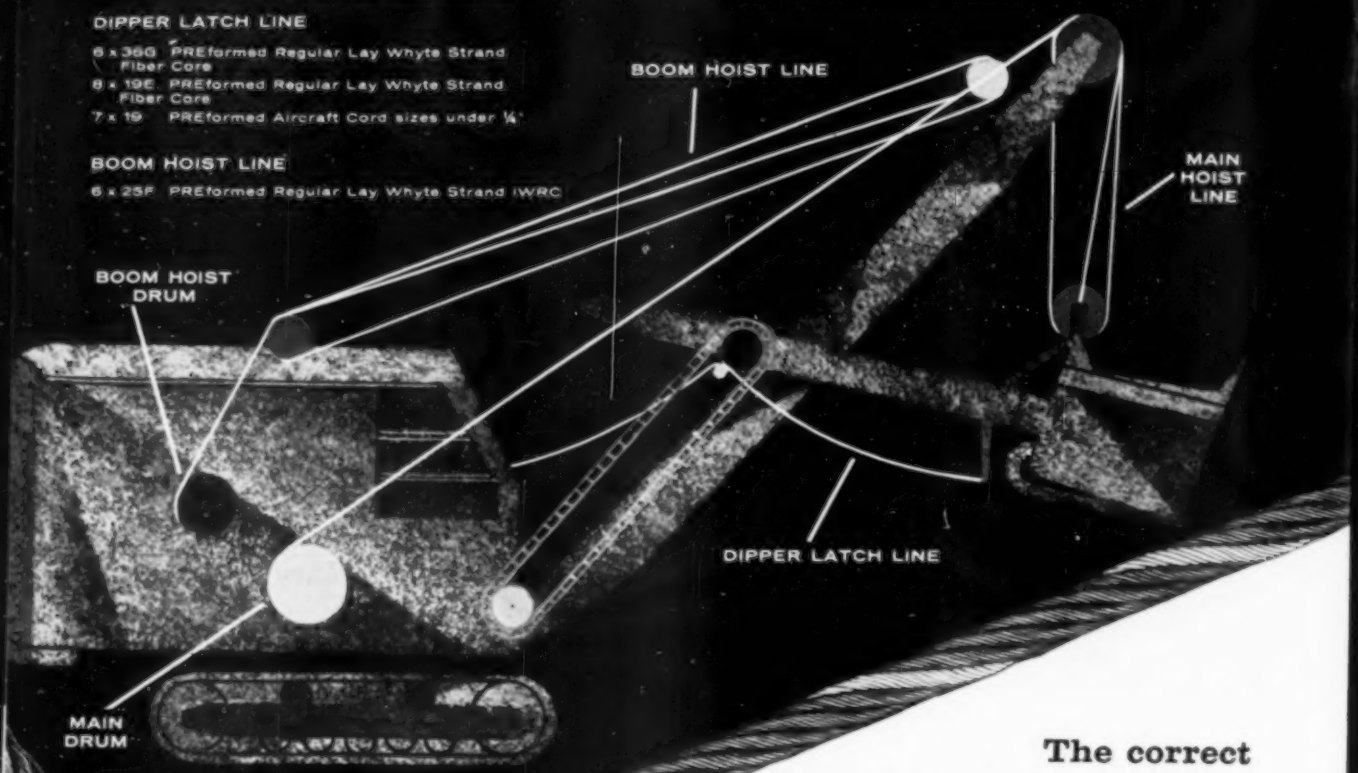
1" and Larger	6 x 41F	PREformed Lang Lay Whyte Strand IWRC

*Where sheaves or drum diameters are less than 22 times rope diameter.



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Whyte Strand wire ropes are PREformed to eliminate any internal stresses in manufacture. This is particularly important in shovel service, where rough use and reverse bends subject *any* wire rope to severe flexing and bending strains as it curves around sheaves and drums.

In addition, every inch of Whyte Strand wire rope is internally lubricated. As the rope flexes, this enables adjoining wires to move by each other without wear, and extends the life of the rope. The tenacious lubricant also protects the exterior strands against moisture and corrosion.

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Excavating Engineer
founded 1905 MAY, 1958

Working in the glare of its floodlights on the swing shift, a 4½-yd. 110-B electric shovel loads rock from cut into 15-yd. Euclid.

Big Highway Takes Big Equipment

by Floyd Suter Bixby

Nevada contractor uses 4½-yd. electric shovel and outsize mining drill to help grade 1,600,000 cubic yards of material for a mountain highway. Excavation was completed in less than eight months.

BETWEEN Sparks and Fernley, Nev., where U. S. route 40 twists its way down a crooked canyon, a significant step has been taken in the direction of using big equipment on highway jobs.

Isbell Construction Co., Reno, Nev., has pointed up a new trend in road building by using a 4½-yd. electric shovel and a mining-type blast hole drill to assist in moving a 1,600,000-cu. yd. grading job in less than eight months. Half a million cubic yards of the job was in rock; about 300,000 cubic yards could only be moved by drilling and shooting.

The futuristic equipment display marshaled by Isbell had a 4½-yd. Bucyrus-Erie 110-B electric shovel in the principal role. It was supported by Northwest 2½-yd. diesel shovels and a scraper fleet. A Bucyrus-Erie diesel-electric 40-R blast hole drill, usually seen only on

Power for electric shovel is furnished by Caterpillar D397-D mobile electric set mounted in a semi-trailer. Towed by a Cat D8, trailer follows shovel to new site.

Shovel loads rock from base of deep cut with assistance of cleanup dozer. In good digging banks, it loaded from 280 to 300 loads per shift into 15-yd. Euclid end-dumps.

heavy quarrying and mining jobs, did much of the powder hole work. The 40-R machine and the 9-in. diameter drill bits it uses are believed to be the biggest drilling equipment ever employed on a western highway construction project.

Size of other equipment in the spread was also in proportion to the job quantities. A large scraper fleet moved unclassified excavation swiftly. Tractors as big as the Cat D9 scrambled up steep mountainsides, shoving dirt and rock off flat benches to pioneer roads where cuts were planned. Production of granular ballast and hot-mix aggregate was a 250,000-ton job. Drainage pipe requirements ran into thousands of feet.

Plans call for a reinforced-concrete bridge and some channel-change work where the new highway runs close to a nearby stream. And, to add interest, a transcontinental railroad track ran close to the job at many points, so that drilling and shooting was tricky business. As a matter of fact, railroad track proximity often made it necessary to use the big equipment at something less than its top capacity in more open, accessible digging.

Aerial view shows the new sweeping, double-barreled stretch of U. S. route 40 east of Sparks, Nev. The Nevada Department of Highways used aerial photographs and stereoscopic interpretation to determine the best location for the new roadway.

Modernizes Obsolete Highway

The $2,490,000 job, 6.3-miles long, modernizes a road which for some time has been obsolete for today's traffic. The section under improvement is a part of the federal interstate highway system

The 4½-yd. dipper looms big as workmen load electric cable onto sleds which will be skidded along the road by a D8.

Rotary drill bored 9-in. dia. blast holes 25 feet deep. Power for the electrically controlled machine is generated by a diesel engine mounted inside the drill housing.

and is being built to ultra-modern standards. Replacing the old twisting, two-lane, dangerous killer road, the new facility will have two 38-ft. wide paved roadways separated by a safe dividing median depressed into the roadway grade.

The subgrade soil of the new highway is generally good, and specifications call for its uniform compaction to about 93% of its optimum density. From 5 to 13 inches of minus 3-in. gravel subbase material will be placed and compacted just over the subgrade. A uniform leveling course of minus 1-in. crushed gravel and rock, three inches deep, will overlie the gravel ballast. Paving specifications call for 3½ inches of plant mixed bituminous surfacing, topped by a special ½-in. thick open graded surface mix, which Nevada is starting to use on an experimental basis.

To determine the right location for modern 70-mph traffic through steep, mountainous canyon terrain, the Nevada Department of Highways used aerial photographs and stereoscopic interpretation, which tied the proposed location down to known survey triangulation points. While aerial photo-interpretation makes the surveyor's job easier, it can't reduce the amount of excavation a road like this requires. The engineer's final estimate showed that about 300,000 cubic yards of rock and dirt would have to be moved per mile.

Roadbuilding through rugged, mountainous Nevada terrain required cuts as deep as 180 feet. In 145 working days, Isbell rushed the tough six-mile job to 85% completion.

Deep cuts were customary. One, 180 feet deep, terminates temporarily into a sloughing berm. Where the berm ends, the cut continues for some distance at a depth of 30 feet. There are several cuts in the 80 to 100-ft. range. The deepest fill is about 60 feet. To use the earth quantities at optimum advantage, engineers specified 6½ million station yards of over-haul. There were also about 135,000 cubic yards of waste, which was desirable for economy.

The finished highway, which is expected to serve some traffic by midsummer this year, will be a motorist's dream. Easy grades, wide sweeping curves and long straightaways belie the difficulty of pioneering, scaling high places, drilling

and loading and shooting the massive hillside cuts. An insurance policy almost as large as the contract amount was carried by Isbell Construction Co. as a protection against possible railroad damage —another index of the difficulties encountered in grading this project. There were no insurance claims. Isbell's powder crews were too careful.

Pioneering access roads was almost always necessary before drilling equipment and compressors could start the steepest cuts. Even after a pioneer road was established, tractor assistance was necessary to get compressors and drills up mountainsides. Because access was so difficult in some places, the company did some excavation beyond theoretical cut lines. The extra excavation will no doubt benefit the highway later by reducing maintenance costs from slough-off removal.

Spotty Rock

Types of rock in the solid cuts varied widely. Granite, sandstone and conglomerate occurred. Much of the rock was spotty, which meant that rippers could handle it adequately in one place while drilling equipment often had to be used only a few feet away in the same cut. There were extensive areas of solid rock which required pattern shooting. Sometimes the hard rock formations were seamed with soft chalk and clay pockets. Trouble always resulted when these chalk and clay pockets were present near the bottom of a blast hole, because they absorbed much of the force of explosives.

Some cuts began in pinnacles so jagged that jackhammer drilling was the only way to gain a foothold. Later, wagon drills and the big Bucyrus-Erie 40-R could be used, but only after preliminary drilling work had been done.

Access roads built by D8's and D9's were often on grades as steep as 40%.

Jackhammer man uses Ingersoll-Rand J4 drill high above the highway where shovels are loading. High drilling like this opened up way for big machines to move in.

Pioneering involved little or no tree clearing, since the heaviest ground cover in this section of Nevada consists of light desert sagebrush and similar type shrubs.

The Bucyrus-Erie 40-R rotary blast hole drill and an Ingersoll-Rand Drill-master handled the big portion of rock excavation. They were rounded out by wagon and jackhammer drills which were used in the more inaccessible places.

As a rule, the Bucyrus-Erie 40-R worked where rock banks were 25 feet deep and where the embankment surface was not too steep. Electrically controlled, the machine is equipped with a General Motors diesel engine to generate power.

The 40-R machine used 9-in. diameter Williams bits to bore the 25-ft. deep holes, each taking about 30 minutes to drill. According to General Superintendent Arnold Blair, the 40-R did its work satisfactorily in all solid formations and even in areas where cemented boulders were found. Hole spacing for the 40-R averaged 15 x 15 feet.

The other large-diameter machine—

An 80-D diesel shovel carrying a 2½-yd. Esco dipper handles a wide roadway cut.

an Ingersoll-Rand Drillmaster using 6-in. bits—also drilled 25 feet deep. Hole spacing for this machine averaged 12 x 12 feet. The Drillmaster filled the gap between the 40-R and wagon drill work. In several places the Drillmaster worked close to the top of high cuts, after Cats had assisted the machine up steep pioneer roads.

The usual shooting rule on large-diameter work dictated the use of small shots rather than large ones. That is, more 15 to 25-hole shots were fired than larger ones. The reason for this was that practically all shooting had to be done high above the old road. Excessively heavy shots could have plugged the highway for hours or damaged the railroad track. For these reasons, Superintendent Blair chose to use smaller shots, which would shake the ground just sufficiently to let dozers shove the material over the side of a bench or permit direct shovel loading.

All large-diameter holes were loaded and shot by ammonium nitrate fertilizer at a ratio of one pound to each cubic yard. To break the material down as much as possible, the ammonium nitrate was loaded to within 8 feet of ground surface, then tightly stemmed with clay or drill cuttings. A Hercules high-velocity dynamite primer and Primacord detonating fuse were used in each hole to set off charges. Delays were used also to control breakage back into slope lines.

Smaller diameter drilling by Ingersoll-Rand wagon drills and Jackhamers was confined strictly to locations inaccessible to larger machines. Mobile air power for these smaller machines was furnished by 600 and 350-cfm Ingersoll-Rand compressors. Carset tungsten carbide bits were used on the smaller drill rigs to develop as much hole as possible per machine.

A Cat D9 tractor equipped with a hydraulic No. 9 ripper loosens rock prior to excavation by shovels. Rock was spotty and in many cases had to be drilled and blasted.

Ship Bits to Reno

Bits were carefully sharpened at regular intervals by sending them to the Isbell headquarters at Reno, from which they were shipped out to a local bit sharpening shop. On all small-diameter holes, Hercules bag powder and some Hercules 40% gelatin were selected for the shooting.

An impressive array of modern power shovels scattered at strategic locations on the job, took care of a major portion of broken rock loading. The Bucyrus-Erie 110-B, using a 4½-yd. dipper, worked the steep banks of hard material. It gave an excellent account of itself. Where it could work clear of traffic without stopping, it turned out from 280 to 300 loads per shift. These loads were rated at 10 cubic yards compacted measure, or 15 bank yards. The 110-B shovel received electric power

View of crushing plant shows Caterpillar drive on primary end of plant; Symons cone crusher; and feeding trap in background.

from a 350-KW Caterpillar D397-D diesel-electric mobile generating set, mounted in a semi-trailer which moved around with the shovel. A long 2,300-volt cable delivered the power, permitting the generator to be parked a good distance away from the shovel and out of the way of traffic.

In addition to the 110-B, three Northwest 80-D shovels were equipped with 2½-yd. Esco dippers. Thirteen Euclid end-dump trucks, capable of hauling 15 cubic yards bank measure, were scattered as necessary around this shovel spread. The four-shovel spread was geared for a monthly production of about 200,000 cubic yards. The spread actually moved more than a million cubic yards in a five month period during late 1957 and early 1958.

In addition to truck-shovel loading, a fleet of seven Euclid S-18 scrapers was used on unclassified excavation. The east end of the job was in flatter terrain, where grading was considerably easier than on the high west-end mountainside. The scraper fleet did excellent work on the east end, particularly when push-loaded by Cat D9's. As the scrapers dumped material in lifts approximately 8 inches deep, water trucks added the necessary moisture, and sheepsfoot rollers delivered final compaction. Scraper type earthmoving was finished slightly ahead of the shovel-truck phase.

Production of the 250,000-ton gravel and crushed rock item has been assigned to a multi-unit, complex plant setup. The raw pit-run aggregate is being excavated from a natural stream bed deposit near the center of the job. This digging is being handled by a 2½-yd. Northwest shovel. Hauling from the digging site is done by three Euclid model F trucks.

The Euclid trucks make a short run to the crusher site, then end dump their loads to the plant feeder trap, which is covered by high-strength manganese grizzly bars spaced on 11-in. centers.

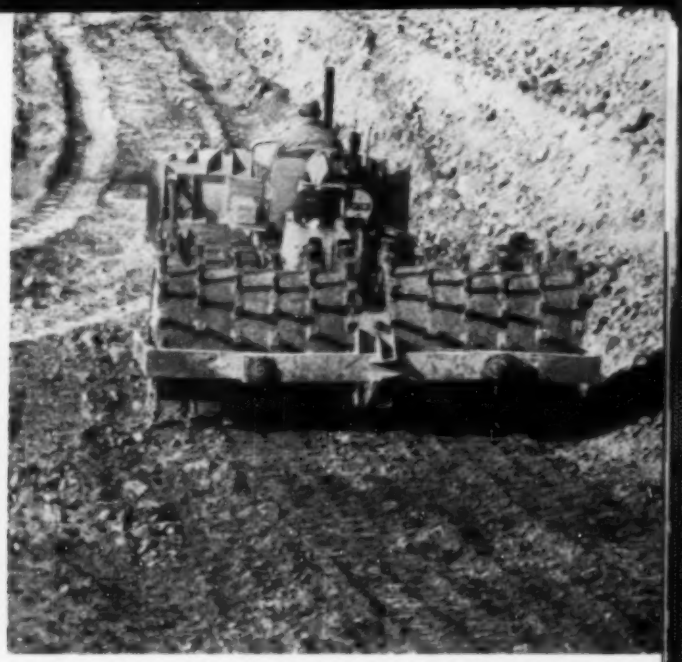
Reject Boulders

Boulders bigger than this clearance are automatically rejected and shoved aside from time to time by the Cat D8 dozer which services the plant area. The grizzly frame, 12 feet wide, is just big enough to take the dumped loads safely. The grizzly bars are set on a 30° angle.

In passing through the plant system, the material passes over an electrically powered 30-in. conveyor to a Cedarapids primary jaw crusher, where large pieces of rock are broken into minus 4-in. size. All material then passes over a Pioneer vibrating screen system, which separates large-size particles and routes them to a Symons cone crusher that is arranged in closed circuit with the Pioneer screen deck. Acceptable material at the vibrating screens is pulled off immediately and sent to storage in a large surge pile. Later, acceptable throughs from the Symons cone crusher are also put in surge storage.

The surge pile is tapped by an 84-in. Armco recovery tunnel with feeder gates in its roof. A 24-in. conveyor system pulls material out of the surge pile and takes it to a Cedarapids screening plant, which forms the second major unit of the setup. Large sizes are routed into a Symons cone crusher for final size

Wire fencing is installed parallel to the roadway to prevent loose material from upper cuts from rolling onto the highway.



(Left) Dirt fill is brought in by Euclid S-18 scraper. (Right) After water is added, a sheepsfoot roller compacts the 8-in. thick lift.

reduction. The finished product passes either to surge bins for direct truck loading or to a surge pile where a Sierra Loader is available for truck loading.

Surge storage loading is also done by a Caterpillar 977 Traxcavator and a Michigan 175-A tractor shovel. A fleet of various make trucks and semis haul the material to the highway, where Caterpillar No. 12 motor graders roadmix the aggregate while water is sprinkled in. When the optimum in moisture and blade mixing has been developed, the stone is rolled tight by Tampo pneumatic and Buffalo-Springfield steel wheel rollers.

Because the project is located only 25 miles east of the company's headquarters at Reno, extensive on-the-job maintenance facilities were not necessary. A steel shop building capable of taking two major units at a time was set up at a halfway point at the job site, but all major engine repairs were handled by taking the machines to Isbell's Reno headquarters, where one of the finest shops in the Rocky Mountain area is located.

Field headquarters, however, was efficiently organized. Cable spools were neatly racked, drums of lubricants were arrayed in easy-to-reach order and a Lincoln mobile service unit made its rounds each day. A considerable amount of two-shift operation, particularly on drilling and excavation, made graveyard shift maintenance necessary. The equipment was kept in such good shape by graveyard crews that it worked all winter with scarcely any lost time.

One particularly tough maintenance problem was solved on the Euclid S-18 scrapers. Segmented cutting edges often tore loose from enlarged rivet or bolt holes. To combat the trouble, welders fastened the segments together with Lincoln welding rods, after the segments were installed. This extra stiffening gave the cutting edges sufficient strength to hold up even in some of the rocky conglomerate which was dug.

Setting typical Isbell Construction Co. speed patterns on this project, the fast-moving spread had the job ahead of schedule right from the start and kept it that way. Nevada State Highway Department officials expect this speed to reflect itself in the availability of the new section to traffic considerably sooner than was considered possible.

Personnel

Over-all supervision of the project for the Nevada Department of Highways is under H. D. Mills, state highway engineer, with J. D. Meacham as construction engineer. Arnold Blair was general superintendent for Isbell Construction Co.

Caterpillar No. 12 grader roadmixes crushed rock for one of the leveling courses. This type of heavy flexible base cushions traffic loads and makes the pavement last longer.

Source of gravel is a 3-mile section of rock deposited by glaciers in the Umpqua River bed, 11 miles upstream from Reedsport.

Barge-Mounted Clamshell Dredges Rich Gravel Bed

by Ray Day

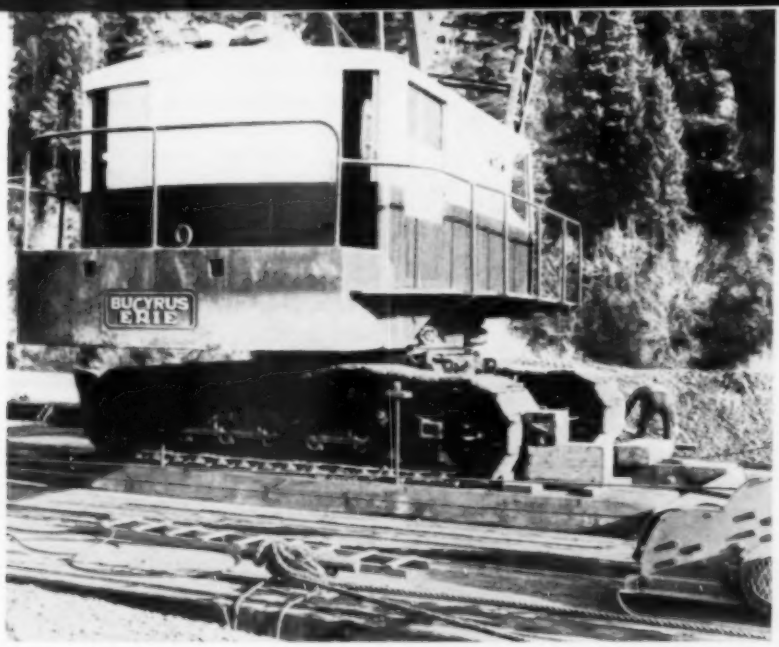
Barge of gravel waits out the final swing from the diesel-powered 71-B machine. Digging is done with a 3-yd. Owen heavy-duty DX clamshell carried on a 60-ft. boom.

IF an expanding market is forcing your equipment into overtime work, get bigger machinery. If operator and oiler wages are a factor in production costs, get bigger machinery. If tie-up time for attendant plant deserves consideration, get bigger machinery.

O. H. Hinsdale, president of Umpqua River Navigation Co., Reedsport, Ore., has believed in the bigger machinery rule for years. During the fall of 1957, he backed up his idea by purchasing a 3-yd. Bucyrus-Erie 71-B machine for barge-mounted clamshell dredging in a gravel deposit. The machine replaced a smaller 38-B rig. Geared to a production schedule of 1,200 cubic yards of gravel a shift, the 71-B has already balanced the production chain which Hinsdale heads—a chain which includes a new crushing-screening plant for the production of modern rock products.

Umpqua River Navigation Co. is a heterogeneous business enterprise. It includes river towing on the navigable

Oregon coast gravel producer digs Umpqua River bed 60 feet below surface.



For travel to the over-water work area and back to the yard, the 71-B is mounted on a 38 x 130-ft. barge. The machine is anchored down by two cross members strung transversely across the track frame. Members are bolted to the barge deck.

Powerful closing jaws of 3-yd. Owen clamshell scoop up a full load of Umpqua River gravel with every trip under water.

lower Umpqua, gravel production for concrete aggregates and highway subbases and the sale of finished concrete. The market area extends from Coos Bay, south of Reedsport, throughout the lower Umpqua Valley, which runs along the Pacific Coast. Through the years, business has continued to increase as demands for products, particularly highway gravel, have risen.

The Umpqua River's bed, at a point about 11 miles upstream from Reedsport, has long been known as an area rich in gravel. Ages ago, well rounded particles of many kinds of rock washed down or were pushed by glaciers to concentrate in a three-mile section where most of the gravel is now dug. There is granite, petrified wood, limestone, volcanic tuff and quartz sand. There is also sufficient gradation of the material so that a coarse or fine raw product can be excavated at will. In years past this rich river deposit produced gravel ballast for the Southern Pacific Railroad roadbed which passed up the coast, for many highway bridges, roadbeds and various buildings in Coos Bay, North Bend, Reedsport and adjoining cities.

Since the Umpqua River Navigation Co. started in business, its basic operation has been a combination dredging-towing-screening-delivery method. For many years the barge-mounted Bucyrus-Erie 38-B adequately met digging demands. As business grew and highway roadbed gravel increased to form 60% of the business volume, however, purchase of a larger machine seemed more and more necessary. Hinsdale looked at a 4-yd. machine working on a nearby highway job. What he saw one operator accomplishing in production helped him make his decision. The 71-B was purchased through Clyde Equipment Co. at Portland, Ore.

So the 71-B could get to its over-water work area and back to the yard, the machine was mounted on a newly reconditioned 38 x 130-ft. wood barge. The barge is not self-propelled; it depends on one of the company's five tugs for moving.

Anchor Machine

The standard crawler tracks of the 71-B were left on the machine, and a longitudinal bed of 12-in. fir timber was built up, full width, under each crawler track. The machine then was walked on the barge and perched atop the timber platform. Two heavy steel cross members were strung transversely across the track frame and bolted down by heavy steel bolts. This arrangement will al-

The tug *Westport* heads upstream with an empty barge. Eleven-mile trip to the Reedsport process plant takes about 45 minutes.

Washington whirley crane at Reedsport headquarters unloads material from barges to storage, or moves it directly into hopper of the rock crushing-classifying plant.

ways hold the machine snug against the deck.

The 71-B is equipped with a General Motors 6-110 diesel engine. It swings a 3-yd. Owen heavy-duty DX digging bucket on a 60-ft. boom. The cab is equipped with a Motorola two-way radio transmitter, with the radio aerial attached to the top of the 71-B's gantry. This places the 71-B's operator in close contact with headquarters in Reedsport and with all units of the tug fleet. The Owen clamshell bucket is steadied by a McCaffrey-Ruddock tagline.

The barge deck is specially equipped for moving the unit as it digs. Moving lines, fore and aft, X-out toward Danforth or concrete anchors, the latter with steel flukes. These anchor lines can be tightened or paid off from the drums of a Washington Machinery Co. deck hoist, powered by a small Wisconsin gas engine. There is also a Schufman hoist for moving scows upstream as they are loaded. A pair of Beebe hand crabs with timber lead-outs also assist in moving scows.

Excavation by the 71-B takes place just off the front end of the barge. Digging reaches depths as great as 60 feet below the river surface. Experienced operators like Dick Otto soon learn the feel of a machine and can gauge the behavior of the underwater digging cone about as readily as if it were topside and visible. The barge-mounted clam operates by making regular cuts over the excavation area, backing up or moving ahead as required. Using about nine gallons of fuel per hour, the machine can load a 500-cu. yd. barge in about 3½ hours. Production depends on several factors, including coarseness of material and digging depth. In any case, each swing brings up a full clamshell bucket of gravel.

The clam swings slightly less than 90° to dump its material into a fleet of six 34 x 204-ft. steel barges, converted to this industrial operation from former LSM use during World War II. The company also owns a flat wood

Operator Dick Otto can communicate with the Reedsport office or any part of the tug fleet. (Right) A Motorola two-way radio aerial is mounted on the gantry frame.

barge the same size as that on which the 71-B is mounted, along with several older wooden scows. The main share of gravel hauling is done by the converted LSM fleet, however, since these bigger hulls will carry about 500 cubic yards per trip.

Owns Tug Fleet

The company owns a fleet of five tugs, which except on rare occasions stays on the Umpqua River and in the Reedsport harbor area. The open Pacific, except in the calmest weather, is not well suited to such small craft.

The tug *Westport*, powered by two Caterpillar D13000 diesels, is the firm's largest. The tug *Cathlamet*, with a Caterpillar D17000 engine, also does a great deal of heavy towing. Other two-man tugs include the *Juneau*, with a Cummins 175-hp engine, and the *Tiger*, equipped with a Caterpillar engine. A small one-man tug, the *Umpqua*, has a Cat D318 in its engine room.

When tugs bring a loaded barge into headquarters dock, the material passes through an efficient sizing route. Raw gravel is cleaned, crushed and screened; it is then loaded out for shipment. Barge unloading is handled by either a gantry-mounted Washington whirley crane, with a 3-yd. Owen unloading clam, or a barge-mounted Washington machine, which also sometimes acts as a digging excavator, like the 71-B. Unloaded from the barges, the material is stored temporarily in an 8,000-yd. surge pile, or, as is sometimes the case, it is loaded directly to the feeder hopper of the rock crushing-classifying plant.

Despite the fact that the normal weight of raw material is about 3,500 pounds per cubic yard when dug, it contains some clay and other decantable materials, which must be removed by washing. The washing portion of the sizing plant puts water in a high-pressure jet stream on the rock as it moves across the screens.

Principal plant components include a 4¼-ft. Symons standard cone crusher, two 3-ft. Telsmiths (one is a fine-head crusher), a Simplicity 4 x 16-ft. scalping screen and one triple-deck Cedarapids 4 x 14 vibrating screen. The crushing ratio is not great because gravel boulders up to six and eight inches in diameter are found only in the coarser material. Usual size of raw material entering the plant is 4-in. minus.

Turned out of the screening plant at peak rates of about 1,500 cubic yards per day, sometimes in two sizes, the material is hauled away by truck, delivered to railroad cars for rail shipment or stockpiled for later use. A Hough Payloader is being used to load railroad cars, and truck loading is handled by an Allis-Chalmers HD-11 crawler-mounted machine with 2-yd. front-end scoop.

Hough Payloader loads a railroad car of concrete aggregate for shipment up the Pacific Coast. Market area runs from Coos Bay throughout the lower Umpqua Valley.

Preventive Maintenance

Believing in the importance of preventive maintenance, the company has a well-staffed repair shop at its Reedsport headquarters. Mechanics from this shop service the Noble concrete batching plant and two Rex truck mixers which haul concrete to nearby jobs. The shop also maintains, lubricates and fuels eight International hauling units which deliver gravel and aggregates. The Internationals include five double-trailer type units and three semis with Peerless bottom-dump trailers. The shop also keeps the rest of the yard equipment in topnotch condition.

According to supervising officials, the new rock plant and purchase of the larger size barge-mounted clam have put the company ahead of its current market. Any reasonable order can be met promptly. If the market continues to expand, the firm will be able to handle increased business with its present facilities.

General supervision of all operations is under Manager J. H. Schaefer, who is responsible to O. H. Hinsdale, president and owner.

Gravel is loaded to a county road department truck by an Allis-Chalmers HD-11 with 2-yd. scoop. The firm has eight International trucks which deliver rock products.

A 5-yd. electrically-powered shovel dumps blasted rock from one of eight cuts on route 17 job into 17-yd. Euclid end dump.

Dig Heavy Rock For Catskill Road

ROADBUILDING in a mountainous resort area can be difficult and irritating to contractor and traveler alike. Edward F. O'Neill, a graying New Jersey Irishman, could tell you this. O'Neill is project manager for George M. Brewster & Son, Inc., the Bogota (N. J.) company which is constructing 8.27 miles of state route 17 near Bloomingburg, N. Y., in the heart of the Catskill Mountain resort area.

Brewster's section of route 17, being built under a $6,251,000 federal-state 50-50 contract from the New York Department of Public Works, abuts completed sections of the new road on both ends. Going west from Bloomingburg, route 17 is a main artery to Binghamton, N. Y. The New York Thruway, the busy highway between New York, Albany and Buffalo, lies 27 miles to the east and south of Bloomingburg.

New York City is about 80 miles southeast of Bloomingburg.

Route 17 in the summertime, especially on a Friday night, Sunday night and Monday morning, is bumper-to-bumper at Bloomingburg with automobiles carrying metropolitan New Yorkers to and from fresh-air weekends in the Catskills. The section of the present route 17 which Brewster's construction will replace is of two and three-lane construction. It passes through Bloom-

Brewster & Son, Inc. battles constant traffic in building a four-lane road in resort area.

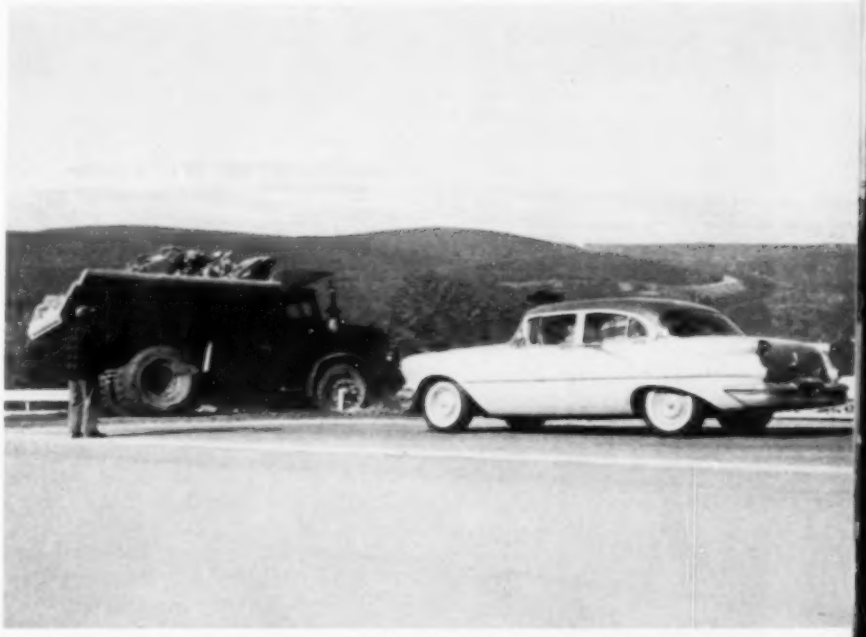
Here's one of the three Bucyrus-Erie 2½-yd. shovels which joined the 120-B in excavating rock. This 54-B is working in a large cut. A Cat D9 bulldozer cleans the area.

ingburg, with its red light, on the way up or down from Sha-wan-ga Mountain (elevation 992.8 feet).

It's this traffic which Brewster's spread has had to contend with and control for the last two consecutive seasons. When the job is finished this August, route 17's divided four and six (on grades) lanes will carry traffic up the mountain at 50 mph. Bloomingburg will be bypassed.

Until the new road is ready, however, traffic control will be a problem to the Brewster spread and to highway enforcement officers. The big bottleneck is west of Bloomingburg, headed up the mountain, where Brewster had to build a small detour—a reverse curve—to get at its excavation and to allow traffic to flow onto the completed section of route 17.

It is necessary for the Euclids loaded with rock to cross this detoured route and to dump either in a waste pile or on an access road Brewster is constructing. A flagman—either a Brewster employee or a paid policeman—directs traffic.



(Above) A flagman halts traffic on present route 17 to allow loaded dump to cross highway. (Below) After crossing road, a Euc dumps the rock on a fill for access road.

Traffic Heavy

"It's a rough situation," said O'Neill from behind his horn-rimmed glasses. "This area, I would guess, has a wintertime population of about 250,000. But, come summer, its swells to around a million. You should see the cars on this mountain during a summer weekend. We've had to stop work many times on a Friday afternoon because we couldn't buck traffic. Saturday work, especially between Memorial Day and Labor Day, has been held to a minimum. We've had traffic backed up here for more than a mile. Why, people on their way to vacations have come seeking us out on the job just to bawl us out for delaying them."

Because of the traffic problem, Brewster concentrated its equipment on the rock excavation during the winter and avoided use of the crossing during the peak summer months. Rock excavation proceeded smoothly last winter and in the winter of 1956-'57, despite a cold snap that saw temperatures dip to 26 below zero.

Brewster's contract is for the excavation, grading, drainage, structures and paving of both the 8.27 miles of route 17 and 4.4 miles of secondary feeder roads. John Arborio, Inc., Poughkeepsie, N. Y., has a sub-contract from Brewster for paving route 17 with nine inches of reinforced concrete on a 12-in. gravel sub-base. For the 18-ft. wide secondary roads, Brewster is laying a 1½-in. layer of blacktop atop a 6-in. stone base.

Built within a right-of-way that av-

Power for the 120-B, initially purchased from a local utility, was provided by a Caterpillar D397 diesel-electric set when the shovel moved into less accessible areas.

erages 250 and 300 feet in width, the new highway will have one 13-ft. and one 12-ft. lane in each direction. A 12-ft. creeper lane is being added for grades. Four and 10-ft. stabilized shoulders will be utilized. The grassed, concaved mall will average 44 feet in width, except where creeper lanes are necessary.

Brewster cleared 125,000 acres of medium woods with three Caterpillar D8 bulldozers. Most of the timber was burned on the right-of-way.

Brewster's excavation, now nearly completed, will total about 3 million yards. This includes 800,000 yards of rock—shale, sandstone and quartzite—and 2,200,000 yards of earth, ranging from glacial till through sand. Some of the boulder-strewn glacial till was tight enough in pockets to require shooting.

O'Neill started some of the excavation with rubber-tired scrapers, but turned to shovels and bottom and end dumps when the boulders and rocks caused excessive wear on tires.

The job was divided into eight major cuts ranging to a depth of 75 feet and producing from 80,000 to 900,000 yards of material each. The largest cut, No. 1, will produce 700,000 yards of rock and 200,000 yards of overburden.

Much of the rock has been excavated by a 5-yd. electric shovel, a Bucyrus-Erie 120-B, which Brewster had shipped to the job site on five trailers from Scranton, Pa. The venerable shovel's previous job had been on a section of the Pennsylvania Turnpike Northeastern Extension.

Brewster's daily excavation averaged about 10,000 yards per 10-hour shift, with a general range between 3,600 and 14,000 yards. The 120-B, working in the most difficult rock, averaged about 3,000 yards a day.

Initially, Brewster purchased power for the 120-B from a local utility. When the big machine moved into a cut where it was impossible and uneconomical to bring the transformer, the 4,000 volts were supplied by two Caterpillar D397 diesel-electric sets. Another D397 unit was held in reserve.

Open Up Cuts

The late summer and fall months of 1956 were spent in stripping and opening up the cuts so that the rock excavation could continue during the winter. Three 2½-yd. Bucyrus-Erie 54-B shovels joined the 120-B to excavate rock. A 2-yd. Lorain 85 was assigned to excavating common and sub-base material. A Bucyrus-Erie 51-B, used either as a 2-yd. shovel or dragline, was used for sloping and trenching. Also used for sloping and concrete pouring was a 1-yd. Lorain 50K.

At the peak, O'Neill had 30 Euclid bottom-dumps and 20 end-dumps, all of 17-yd. capacity, shuttling between the shovels and the fill and waste areas. With only 213,000 yards remaining to be excavated, the hauling fleet had dwindled to 14 bottom-dumps and 11 end-dumps late last year.

Hauls averaged about 7,400 feet, with a maximum of about 11,000 feet. Waste totaling about 450,000 to 500,000 yards was being dumped at the closest possible places from the loading sites. Some sand was stockpiled for use as dressing. The excavated shale was excellent material for haul roads.

No special drilling and blasting problems were encountered. Large holes were drilled by two Mayhew rotaries—

(Left) A Mayhew rotary, mounted on an Autocar diesel, puts down 6¾-in. blast holes. (Right) Gardner-Denver Air Trac sinks hole.

6¾-in. holes by a Tornado and 4¼-in. holes by a Hurricane. The Tornado is mounted on an Autocar 10-wheel diesel; the Hurricane is on a GMC 10-wheel diesel. Gardner-Denver compressors supply air.

The rotaries have handled more than half of the drilling. At the outset, the 61-ft. holes were spaced on 8 x 10 and 8 x 12 patterns. Breakage proved better than anticipated, and the spacing was increased to 18 x 20 where fitted.

As many as six Gardner-Denver Air Tracs, drilling 3½-in. holes on a 9 x 9 pattern, put down the remaining blast holes. The little secondary drilling necessary in shallow cuts is done by a jib drill—two Joy T-400's mounted on a D8 tractor with a Joy 600 compressor.

Conventional explosives of 40% maximum strength and ammonium nitrates are used on a factor of a pound per yard of rock. Brewster divides its explosives supply among DuPont, Atlas, Hercules and American Cyanamid. Primacord is used throughout with eight delays.

Overall, the job was 50% completed by November 1. Sub-contractor Aborio began laying the 267,000 square yards of concrete pavement in mid-October. Concrete is delivered in Ford trucks from Aborio's 150-ton batch plant located along the right-of-way. The plant has Blaw-Knox aggregate bins and a Butler cement bin. A bag of cement is added to each batch. The aggregate plant is charged by a Northwest crane.

Aborio's equipment includes two dual-drum Koehring pavers, a Blaw-Knox spreading machine, two Blaw-Knox finishing machines; a Koehring and a Buckeye sub-grader; and a Buffalo-Springfield tandem roller.

Using a hydraulic ripper, a Caterpillar D9 is preparing an access road. Brewster's contract is for construction of 8.27 miles of route 17 near Bloomingburg, in Catskills.

Lay Concrete Carpet

The 9-in. concrete carpet is laid atop two 6-in. layers of sub-base. The 120,000-yd. sub-base item was supplied and deposited by Brewster from an off-site

(Below) One of Brewster's two ¾-yd. Bucyrus-Erie 22-B hoes is trenching for drainage pipe. (Right) Later, equipped with a sling, the 22-B positions pipe in trench.

(Left) A Hough Payloader dumps backfill over drainage pipe. (Right) One of 15 Cat D8's on job spreads embankment fill.

(Above) Carpenters prepare forms for deck of bridge which will carry old Route 17 over new highway. (Below) A Lorain dragline cleans out muck in one of the cuts.

pit and from some areas on the job site.

Sheepsfoot and Bros wobble-wheel rollers are pulled by four Cat D8 tractors, and sometimes a D6. Brewster's fleet of 19 Cat tractors includes 15 D8's, three D6's and one D9.

Two Mack 3,000-gallon water tankers are used in compaction and for sprinkling haul roads. Three Cat No. 12 motor graders help maintain haul roads.

Asphalt for the secondary roads comes from a local supplier and is spread with a Barber-Greene machine. This work was 60% complete late last year.

Two ¾-yd. Bucyrus-Erie 22-B hoes, with help from the 51-B, the Lorain 50K and a Hough Payloader, are excavating for and placing 60,000 feet of drainage pipe ranging in diameter from 6 to 48 inches.

A 30-ton Lorain MotoCrane and a 50-ton Manitowoc crane are used for miscellaneous work.

Delay Job

O'Neill estimated that late delivery of steel for the six bridges on the job had delayed the job three months. The bridges range in length from 106 to 174 feet. Concrete piers were in place for all of the bridges. Steel had been delivered for only the one that would permit diversion of traffic when the plug carrying the present detour is removed.

Despite the delays, O'Neill and his staff hope to finish the job by August 1 —two years from the time ground was first broken.

Brewster's field office is an old farmhouse just off the right-of-way. A Mo-

An Irishman from New Jersey, Edward F. O'Neill, is Brewster's project manager.

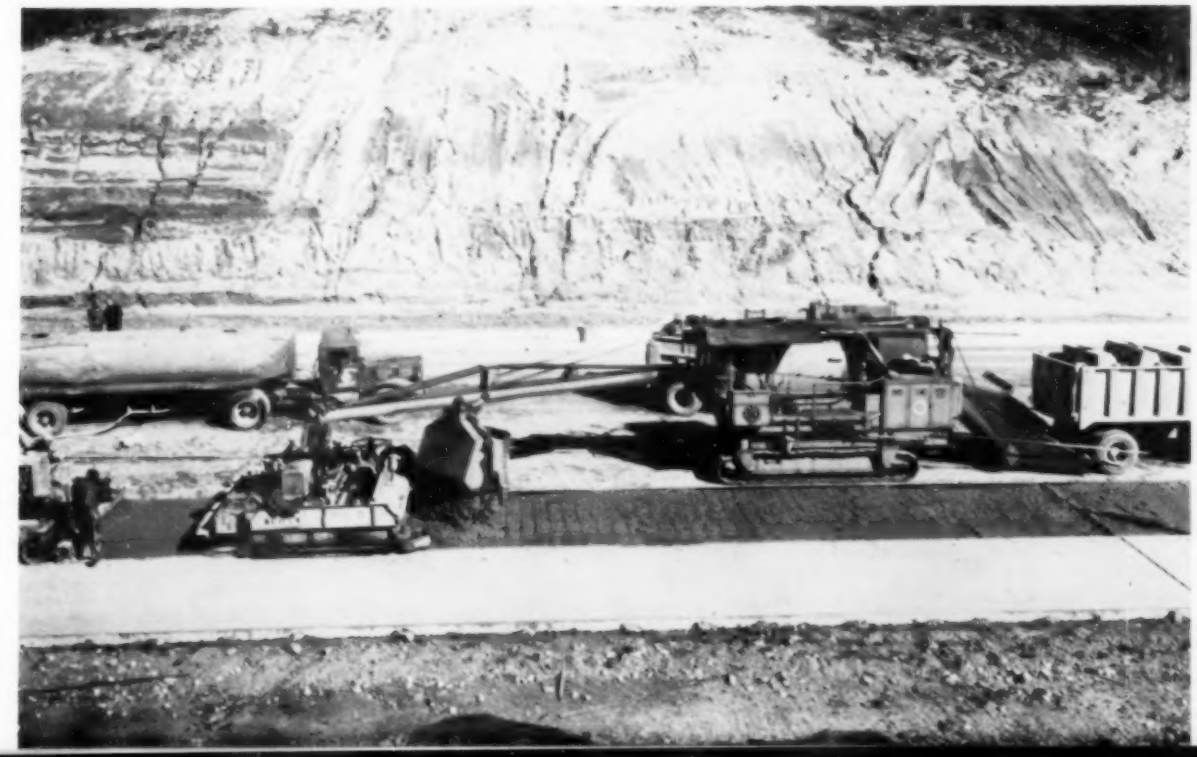
torola two-way radio system allows contact between office, key field men and the large maintenance facilities in several buildings above the office. Major equipment repairs can be done in the shop. Portable lubrication trucks serve equipment in the field.

O'Neill's capable staff on the route 17 project includes Ray W. Buhl, resident engineer; Albert Vonder Esch, assistant project manager; Glenn Walker, superintendent; Thomas Rusciano, superintendent in charge of bridges; Richard E. Rose, rock superintendent; Harold McMahon, master mechanic; Sam Davis, area superintendent; and Edward Boyan, office manager.

William J. Brewster is president of George Brewster & Son, Inc. Goerge M. Brewster, William J.'s son, is secretary of the company and is carrying right along with his father.

(Above) A 50-ton crane places rip-rap on embankment of one of the six bridges on the job. (Below) A Cat motor grader works on roadway. Note the reinforcing steel.

(Below) Here is part of the paving spread placing a second lane on the roadway. A subcontractor is doing the paving work.



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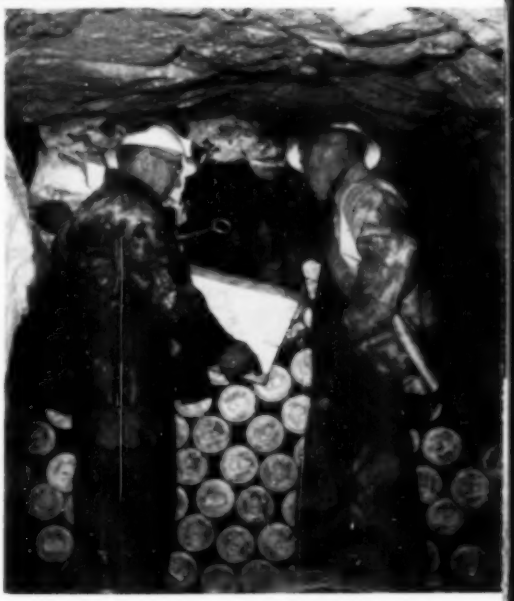
Blast is touched off after nearby town is evacuated.

Here is the inside of the tunnel under Seymour Narrows. Large tube on ceiling carries air for ventilation. Tracks are for battery-operated locomotive which hauls out broken rock. White streak at top of photo was caused by light on hat of man walking towards open camera lens.



Right: F. D. Bickel (left), Du Pont blasting expert, and Jack Buchanan, Northern Construction Co. superintendent, study the loading chart of a coyote tunnel in the north pinnacle of Ripple Rock. Carefully spaced among the 71,500 cans of explosives are 300 priming cans. Detonating cords lead to these primers, which trigger the blast.

Below: Deep into the rock formation drillers drive a coyote tunnel, using air leg drills.

Biggest Non-nuclear Blast Ends Underwater Menace to Pacific Coast Ships

Canadian government removes hazardous underwater peaks of rock, lying in important shipping lane off British Columbia coast, in single blast using over 2,750,000 pounds of explosives.

TWO massive underwater peaks of rock which have menaced navigation, taken scores of lives and wrecked more than 100 vessels in a treacherous strait on the coast of British Columbia were destroyed in April by a huge man-made blast.

In a few seconds, the largest fully documented non-atomic blast in history —more than 2,750,000 pounds of one of the most powerful conventional blasting agents—ripped out a twin peaked submerged mountain to climax efforts that started 15 years ago. Directed by the Canadian government, the project made safer one of the world's busiest water routes through which shipping passes on the "inland waterway" from the Pacific Northwest to Alaska. Total cost was over $3 million.

The two peaks, known as Ripple Rock, rose within nine feet of water surface in the narrow strait separating Vancouver Island from Maud Island. They had been called the worst hazard to navigation on the west coast of North America. Each year Ripple Rock threatened steamers carrying over 175,000 passengers, 2,000 large ships transporting goods worth more than $100 million and many thousands of smaller vessels.

Cause Whirlpools

The twin peaks rose in the middle of Seymour Narrows, which is two miles long and 2,500 feet wide. At its base, the rock is 3,000 feet long and 1,500 feet wide. In addition to the collision dangers from the peaks, a current races through the narrows, at times reaching a speed of 18 mph. Whirlpools, estimated to be 30 feet across and 15 feet deep, imperiled small craft and swallowed at least one barge, drowning nine men. These whirlpools gave trouble to even the most powerful steamers.

As a result, ships had to wait at each end of the passage and could move through safely only twice a day for a period of about 30 minutes when conditions were right. Removal of the peaks provided a safe, normal channel.

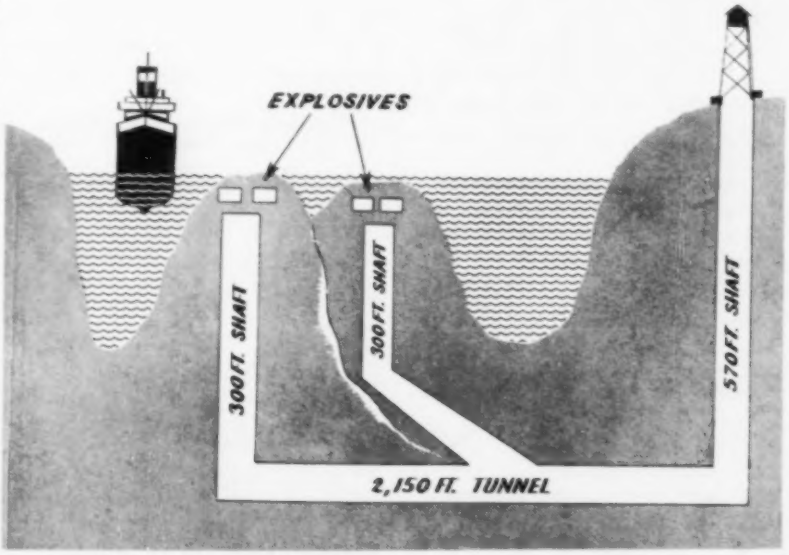
Records, beginning in 1875, document a series of wrecks that measured Ripple Rock's threat to navigation. In 1875 the United States warship *Saranca*, a paddle steamer of 1,484 tons and 13 guns, rammed into the rocks and sank. In the same year another American warship, the *Waschusetts*, hit the rock and was a total loss. Nine years later a British warship piled up at the same place. In 1946, a Canadian hydrographic survey ship with expensive equipment aboard sank after hitting the rocks, and it cost $250,000 to raise her. Scores of other ships have been damaged without sinking.

Demolition of Ripple Rock challenged engineers for years. Dozens of ideas for removing the underwater menace were suggested, including torpedoes, aerial bombardment and even an atomic bomb. Only two previous attempts had actually been made to break up Ripple Rock and both were unsuccessful. In 1943 and 1945, efforts were made to moor barges over the rock from which the peaks could be drilled and loaded with explosives. However, in both cases the irresistible current snapped the cables holding the barges from the shore.

Map shows position of Ripple Rock, which had menaced navigation in the Seymour Narrows on the inside passage to Alaska.

The latest project, begun in November 1955 by Canadian engineers and con-

Continued on page 62



Here's how engineers, working for two years, tunneled under the ocean floor to plant more than 2,750,000 pounds of Nitramex in the twin peaks of submerged rock.

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BEST BUY IN NEW AND USED EQUIPMENT

News from the Field

New Form Saves Time

A new type of steel form, used for the first time on the Greenup (Kentucky) Locks on the Ohio River, is cutting form handling time and producing a better finished product, according to the contractor.

The form is designed to hold horizontal lock wall armor in place while it is integrally cast with the walls.

Searching for a better way to install armor, J. R. Johnson, project manager, and D. J. McMahon, project engineer for Guy F. Atkinson Co., South San Francisco, Calif., and United Construction Co., Winona, Minn., joint contractors on the Greenup Locks, asked engineers of the Blaw-Knox Co., Pittsburgh, Pa., to work out the new design. Blaw-Knox came up with an all steel cantilever wall type form. The form accommodates 5-ft. lifts.

To place the armor, three sliding horizontal panels of correct height are incorporated in each 5-ft. panel. The panels can be slid within the face of the form to accommodate any armor arrangement. On the Greenup Locks job, the contractor is installing sections of armor that range from 18 inches to 55 feet long.

Once the panel is slid out of the way the modified T section of armor is inserted through the face of the form and attached with one or more clips. The clips are mounted on the form so they slide. Thus, there is no problem in matching clips with holes in armor. A bolt is inserted through the clip and armor, then fastened by a nut. After the pour has been made, bolts are unscrewed and the armor remains cast into the concrete.

United Construction Co. formerly used wood-faced forms on such jobs. A switch was made to all steel for these reasons.

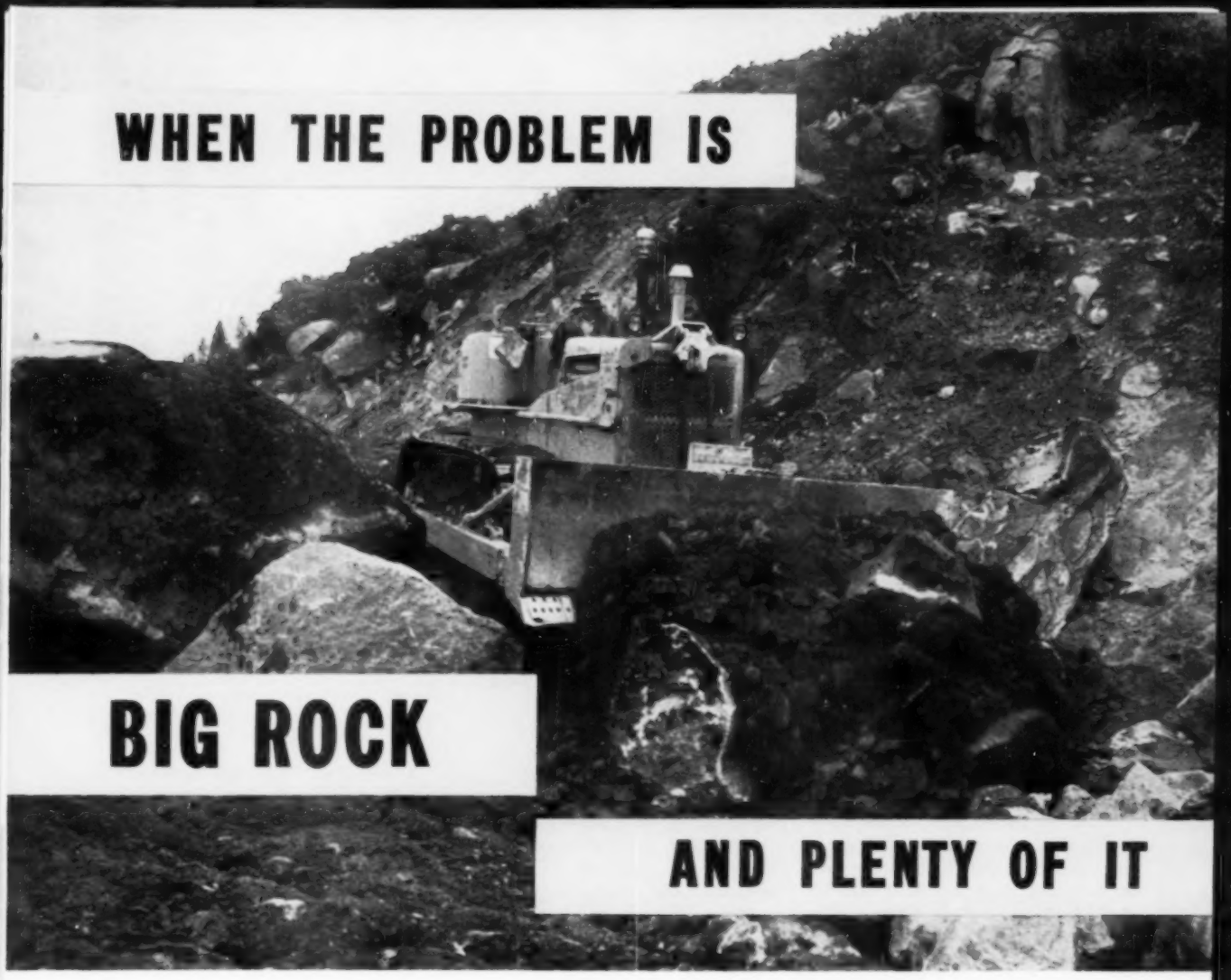
Armor itself may be shipped to the job somewhat warped or bowed, and, while well within mill tolerances for the armor lengths, it is not always within construction limits. The new form is sufficiently rigid so that when armor is attached it is pulled into alignment. The heavy armor is 7¼ inches across the face and has a curvature to the face that protrudes ½ inch from the finished concrete surface.

Since steel does not swell or give, the wall can be formed more accurately than by using old-fashioned wood forms, according to the contractor.

Where armor is placed intermittently, considerable time can be saved. On wood forms, for example, before armor can be inserted the lagging must be removed. This compares with sliding a panel out of the way on all steel forms of this design. When the wood form is to be modified for pouring a wall section without armor, the lagging must be replaced, and this involves a fitting

Continued on page 40

Over 400,000 cubic yards of concrete are required for Greenup (Ky.) locks on the Ohio River. Structures will cut locking through time from six hours to 20 minutes.



8,000 feet up Mt. Shasta in northern California, Everitt Memorial Highway is being extended to Panther Meadows where a new ski resort is under construction. Timber is being cleared to make way for the six miles of new road; overburden is being moved; crushed aggregate is being brought in. But the toughest job of all is wrestling with tons of big rock. No wonder J. W. Briggs & Associates are using a fleet of Caterpillar track-type Tractors—seven D8s and three D7s.

"We especially like those Cat-built U-blades," says Supt. M. S. McMillan. "They really stand up on this rock." As with any piece of big yellow equipment, the reason for this better wear is better design and manufacture. The No. 8U Bulldozer shown on the D8 in the picture, for instance, has cutting edges made of special "Hi-Electro" hardened steel. Powering this 11′ 11″ blade is the 191 HP (flywheel) Cat D8 Tractor.

Every detail of construction of this famous machine aims at easy handling of tough work: roller rims are forged of selected deep-hardened steel; track pins are made of selected medium carbon steel, "Hi-Electro" hardened; diagonal braces on the track roller frames are heavy steel forgings welded to nearly half the length of the frames.

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WHEN THE GOING IS REALLY TOUGH

News . . .

Continued from page 38

job. On the steel forms the panel is merely slid back into place.

The new Greenup Locks, between Ashland, Ky., and Portsmouth, Ohio, 143 river miles above Cincinnati, Ohio, involve construction of a main lock 110 feet wide by 1,200 feet long and an auxiliary lock 110 feet wide by 600 feet long. The main lock will accommodate the maximum size of Ohio River tows, so it will be possible to lock through without breaking up a tow. Greenup Locks replace four locks and dams now on the Ohio, reducing locking through time from six hours to 20 minutes, under most conditions.

Some 402,000 cubic yards of concrete will go into construction of the locks. Armoring is placed in approaches above and below lock gates, at recesses in the lock walls and, generally, wherever a barge or tow would most likely bump the concrete.

Since being developed, the new form design has been used on the Grasse River Locks on the St. Lawrence Seaway.

This design will also be used on the Port Allen locks, which will be constructed in Louisiana in the near future.

When the United States Army Corps of Engineers completes its long-range program for the Ohio River, the present 48 locks and dams will have been replaced by 21 locks of the Greenup type.

Armoring installed on walls of the Greenup locks consists of modified T sections with 7¾-in. wide face. It protects concrete from bumping and scouring.

Power Lines and Boom Accidents

The National Safety Council, Chicago, Ill., has released interesting figures concerning high-voltage accidents in the construction industry in California.

V. L. White, supervising construction engineer of the state's division of industrial safety, informed the council that during 1956 sixteen accidents involving equipment contact with overhead high-voltage lines occurred in California resulting in 18 fatalities.

White said that California has a law allowing the prosecution of equipment operators and employers who allow equipment to come within six feet of a high-voltage line, or who operate at any location without a sign, posted on the rig, displaying the words, "unlawful to operate this equipment within six feet of high-voltage lines."

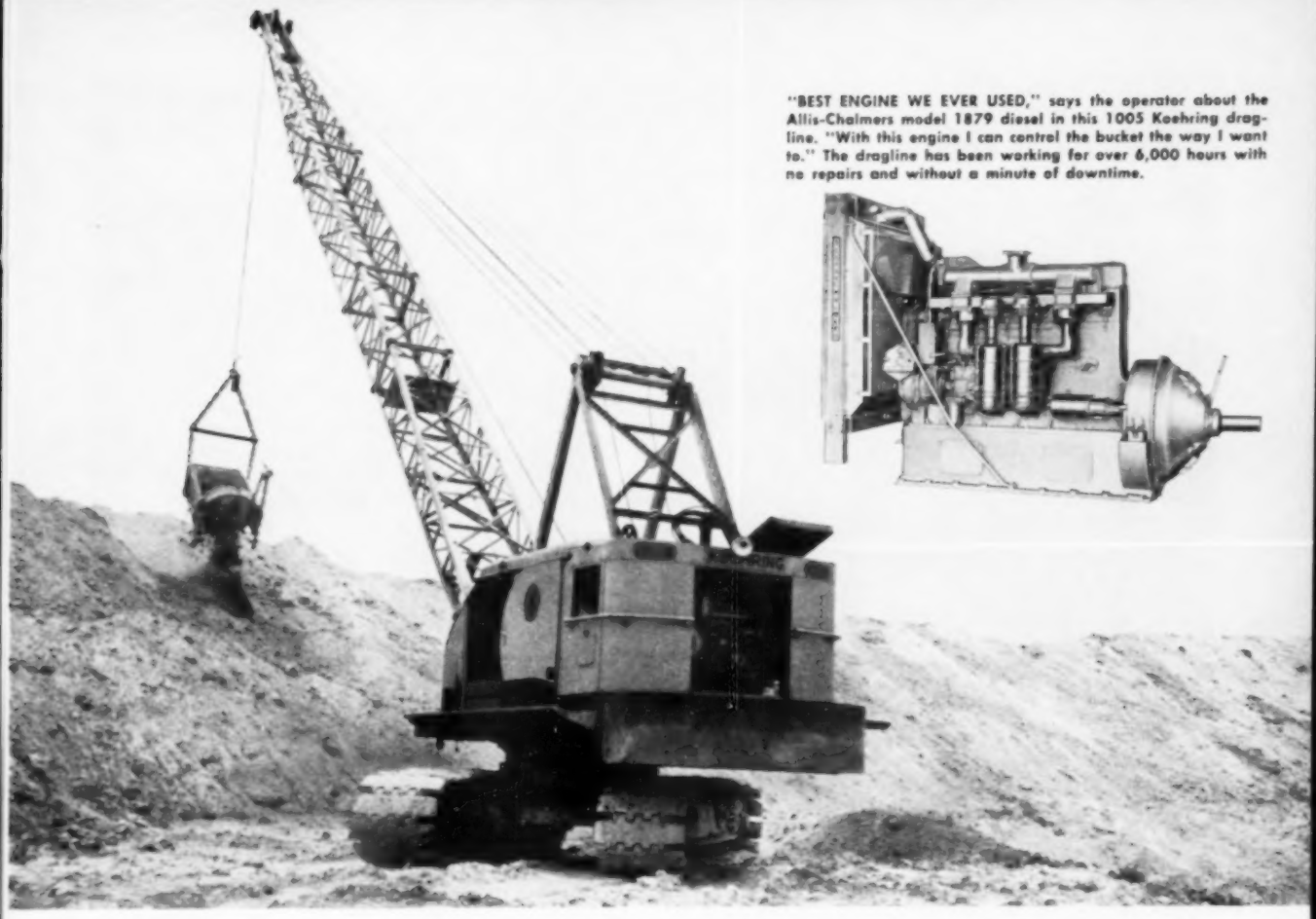
Details of 12 accidents involving power lines and booms are summarized below. The remaining four accidents did not involve equipment carrying booms.

Watershed Program Opens Field for Small Contractors

Construction projects totaling $6.34 billion in the Small Watershed Program, with individual contracts rarely exceeding $100,000, are opening up an en-

Continued on page 42

Case Number	1	2	3	4	5	6	7	8	9	10	11	12
1. Location of accident												
a. on machine					V	V	V		V	V		V
b. near machine	V	V	V	V				V			V	
2. Due to unsafe practice of												
a. operator	V		V	V	V	V	V	V	V		V	
b. groundman		V								V		V
3. Type of equipment involved												
a. crane	V		V	V	V		V	V			V	V
b. pile driver		V										
c. rig for driving & pulling sheeting												
d. dragline												
e. drill rig									V	V		
f. power shovel												
g. mobile tower w/tree trimming platform						V						
4. Mounted on												
a. steel tracks	V			V								
b. truck			V			V	V	V			V	V
c. stationary												
d. trailer												
5. Injury occurred while												
a. pulling load cable		V	V	V								
b. guiding load	V							V				
c. working around machine					V	V	V		V	V	V	V



"BEST ENGINE WE EVER USED," says the operator about the Allis-Chalmers model 1879 diesel in this 1005 Koehring dragline. "With this engine I can control the bucket the way I want to." The dragline has been working for over 6,000 hours with no repairs and without a minute of downtime.

Allis-Chalmers Engines give you DO MORE POWER

That's RIGHT for your needs

RIGHT PERFORMANCE — Allis-Chalmers engines have *Do-More Power* — high torque, maximum work for each operating dollar.

RIGHT TYPE AND SIZE — There's a wide range of sizes and types, 9 to 516 hp — benefit from *Do-More Power* in *all* your equipment.

RIGHT FUEL — You can choose the fuel that's most practical — diesel, LP or natural gas or gasoline.

RIGHT SERVICE BACKING — wherever you are. Your Allis-Chalmers engine dealer has stocks of parts, backed by nearby company branch stocks. He also has factory-trained servicemen — complete facilities to give you prompt service.

See your Allis-Chalmers dealer for full details on *Do-More Power* engines that are right in every way for your job. Allis-Chalmers, Engine-Material Handling Division, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS

BC-11

New PUMP
eliminates priming

- ★ simple
- ★ light
- ★ compact
- ★ quiet
- ★ fireproof
- ★ higher head
- ★ advanced design
- ★ water, oil and other fluids

The Layton pneumatic diaphragm pump has no rotating parts. It responds instantly. Becoming a fast favorite in plants, mines, construction — wherever low-cost dewatering is needed.

Call your distributor today!

LAYTON CO., Inc.

4701 S. WHITNALL AVE., CUDAHY, WIS.

News . . .

Continued from page 40

tirely new field of operations to small contractors. There are 18,000 small contractors (owners of about three machines) throughout the United States.

According to estimates by the Soil Conservation Service, United States Department of Agriculture, approximately 16,500 watersheds in the United States and its possessions urgently need conservation measures. Costs for a complete treatment of a single watershed (terraces, channel improvements and floodwater retarding structures) average more than $1 million. The total potential expenditure by farmers, soil conservation districts and the federal government for all watersheds is almost $17 billion. Time for completion of the program has not yet been determined.

Some of these conservation practices, such as pasture seeding, must be done by landowners. But over 37% of the work involves construction, demanding the special capabilities of earthmoving contractors. This work includes dam construction, terracing and unglamorous but exacting land forming. Contracts will be small, most material to be moved will be earth, and special equipment requirements will be few—all fitting the potential of the small contractors.

The Small Watershed Program was made possible under the provisions of Public Law 566 (1954) as amended by Public Law 1018 (1956). The projects are multiple purpose watershed-protection activities initiated by a local organization and concurred in by the state government. The Department of Agriculture is authorized to help the local organization plan and carry out works of improvement for flood prevention, agricultural water management and non-agricultural water management.

Agricultural water management includes irrigation, drainage and measures to provide a more uniform supply and distribution of water. Non-agricultural water management includes municipal or industrial water supply, recreation, fish and wildlife improvement, pollution abatement by streamflow regulation, saline water intrusion control and power.

Sixty watersheds, covering 2,765,300 acres, have been approved for construction under Public Law 566. As of Nov. 1, 1957, applications had been received in Washington, D.C., for an additional 722 watershed projects with total acreage of over 57 million acres. This is just the beginning of the response by local organizations, because planning a watershed program (before application for federal assistance can be made) is a long and tedious job, often taking over 24 months. An average of 18 months passes between federal approval for planning and federal approval for construction.

On one Texas watershed at the present time, four contractors are moving over a million yards of earth on seven earth-fill dams. The individual jobs aren't impressive, but the little contractor with his two or three machines is doing the small parts of what will be a massive conservation job, when completed.

Fast-Moving Compactor

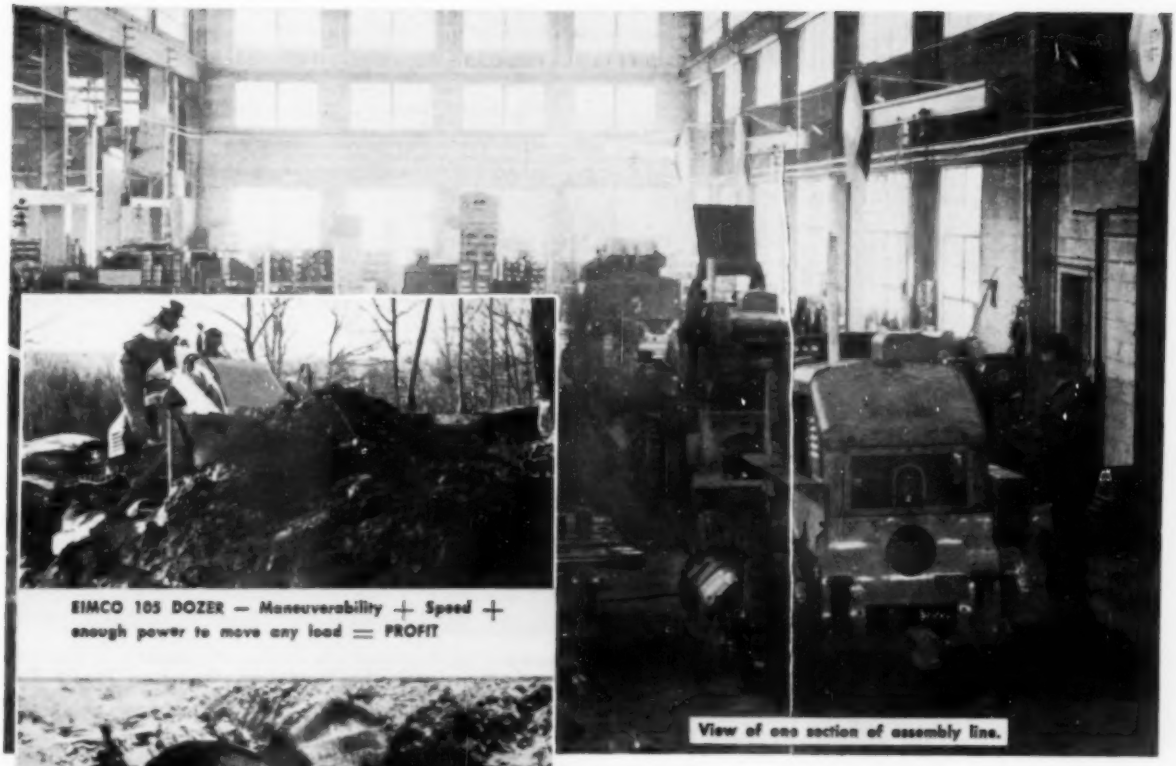
An impressive speed of 8 mph is claimed for a 100,000-lb. fill compactor put to work recently by the Mittry Construction Co., of Santa Maria, Calif.

The diesel-powered unit, designed by Mittry engineers to speed up tamping operations on large earthmoving jobs, is shown below at a dam site near Santa Maria, where it was keeping pace with twenty-two 18-yd. bottom-dump earthmovers.

It has four drums equipped with sheepsfoot tampers and easily does the

Continued on page 44

This 100,000-lb. fill compactor, powered by two engines, has four drums equipped with sheepsfoot tampers. It moves up to 8 mph.



View of one section of assembly line.

EIMCO 105 DOZER — Maneuverability + Speed + enough power to move any load = PROFIT

EIMCO 105 EXCAVATOR (Overhead) — Maximum Crowding force for high capacity excavating + high production loading efficiency = PROFIT

EIMCO 105 FRONT END LOADER — Rugged construction + Tremendous break-out force + maximum stability for high capacity loads (shown above) = PROFIT

HIGH PRODUCTION UNITS

Here is a view you would see any day at Eimco — Dozers, Excavators and Front End Loaders coming down the assembly conveyor line in the big Eimco shops.

Filling repeat orders from users who have learned from experience that Eimco built machines are the high production units designed for really profitable operations.

If costs are eating your profit margins why be hindered with the habit of buying old style tractors.

In the Eimcos you get the quality you pay for as Eimco customers have been doing for almost 75 years.

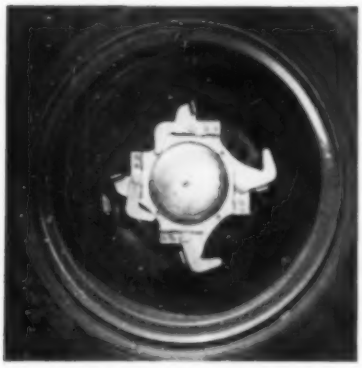
THE EIMCO CORPORATION

Salt Lake City, Utah—U.S.A. • Export Offices: Eimco Bldg., 52 South St., New York City

New York, N. Y. Chicago, Ill. San Francisco, Calif. El Paso, Tex. Birmingham, Ala. Duluth, Minn. Kellogg, Ida. Pittsburgh, Pa. Seattle, Wash.
Cleveland, Ohio Houston, Tex. London, England Gateshead, England Paris, France Milan, Italy Johannesburg, South Africa

B-323

It warns men he can't!



BULLARD MECHANICAL

Back-Up Alarm

Almost every day on some crowded job site, with trucks maneuvering forwards and backwards, a driver grinds into reverse... rear vision is blocked... then ...tragedy!

This simple, failproof, mechanical back-up alarm never forgets to warn men behind. A loud klaxon-like bell rings the minute wheels turn in reverse. It is a complete self-contained unit that can be easily installed on almost all vehicles with conventional wheels.

Write for technical literature, installation instructions and test reports

BULLARD
INDUSTRIAL SAFETY EQUIPMENT

E. D. BULLARD COMPANY, Sausalito, California

A certificate of merit, the Navy's highest award to civilian organizations, is accepted by Harmon S. Eberhard, president, Caterpillar Tractor Co., from Rear Admiral E. J. Peltier. Caterpillar built equipment for Operation Deep Freeze in the Antarctic.

News . . .

Continued from page 42

job of three ordinary tractor-drawn tampers, according to F. R. Mittry, Jr., head of the construction firm. Power for the giant compactor is provided by two six-cylinder series 71 GMC diesel engines delivering 200 hp each through Allison transmissions.

Caterpillar Gets Navy Award

A certificate of merit, the United States Navy's highest award to civilian organizations, has been presented to Caterpillar Tractor Co., Peoria, Ill. The certificate was awarded for outstanding service to the Department of the Navy in development, manufacture and production of specialized tractors for Operation Deep Freeze I, an exploration and construction mission on the Antarctic continent.

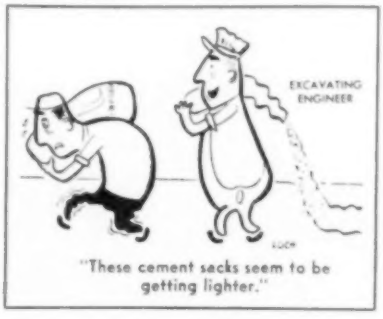
Rear Admiral E. J. Peltier, chief, bureau of yards and docks, on behalf of the Secretary of the Navy, presented the award to Harmon S. Eberhard, Caterpillar's president.

Designing, testing and production of specialized tractors had to be completed within 5½ months, Admiral Peltier explained, because delay of even a few weeks would have meant loss of a whole operating year.

"Assigning its best production and engineering talent, Caterpillar insured completion of this equipment in time to meet schedules," the admiral said. "The excellent cooperation extended by all company personnel involved reflects the highest integrity of purpose and professional ability."

The Navy needed specialized equipment for use in establishing and maintaining seven scientific observation stations in the Antarctic as part of the International Geophysical Year, 1957-58. A contract was let to Caterpillar in 1955 for 10 low ground pressure D8 tractors, two standard D8's, three LGP D4's, nine LGP D2's, 13 electric sets, and several diesel engines. The low ground pressure tractors were equipped with longer, wider track for less than 4-psi ground pressure and other modifications for extended range and operation in temperatures to −65°.

Subsequent contracts for Operation Deep Freeze II, III and IV included 60 trailers and loaders, seven arc welders, 25 diesel-electric generator sets and 12 diesel engines.



"These cement sacks seem to be getting lighter."

These Special Excavating Jobs Are Best Handled by Sauerman DragScrapers

Deep Digging

900-FT. SPAN—65 FT. BELOW WATER...

Load is deposited by tensioning the track cable, thus lifting the DragScraper from the pile. Tensioning continues to the desired height for releasing the DragScraper and returning it by gravity to the pit.

Operator controls digging and hauling from cab in head tower.

"the 10-yd. DragScraper is doing a wonderful job and we could not operate without it..."

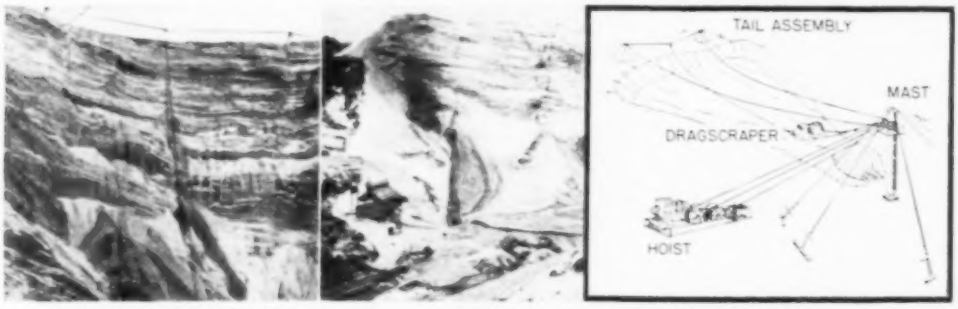
Louis Chinelli, Gen. Supt. Redman Concrete Corp.

Redman had been trucking material at a cost of $35,000 a year to the location where the DragScraper is now placing it. The 10-yd. Sauerman covers a pond area of 1500' by 3000' and is digging 40 ft. deeper than their previous dragline could operate.

The DragScraper digs and hauls on a 900-ft. span. It operates between a 90-ft. fixed head tower and a 40-ft. mobile tail tower which may be shifted to change the line of operation. The company's 1000-yd.-per-day batch plants and its fleet of mixers and trucks are kept busy by the steady flow of material supplied by the DragScraper.

High Bank Digging

175 FT. HIGH—600-FT. HAUL...



DragScraper digs from high bank.

Overall view shows height and steepness of bank. Diagram shows details of Sauerman installation.

"I have nothing but praise for our 4-yd. Sauerman Machine. Since the DragScraper began operations in 1952, we have worked it continuously 12 hours a day..."

John D. Robertson, Gen. Supt. Chandler's Palos Verdes Sand & Gravel Co.

By working down from the top of the 175-ft. bank, the material flows ahead of the DragScraper. This provides bonus loads on each haul and substantially lessens the danger of cave-ins.

Operating cables are powered by a Sauerman three-drum electric hoist. Equipped for rapid shifting, the DragScraper can be quickly positioned to any line of operation between the two tail towers at the top of the bank and the headpost at the hopper.

The plant is the largest sand producer in the South Los Angeles area and, together with two ready-mix plants, keeps 22 ready-mix and 18 dump trucks busy.

The best Sauerman Machine for your plant is governed by the nature of the deposit, location of material, the depth and plant layout. Consult Sauerman engineers about your plant. Their recommendations will be based on fifty years of excavating machinery experience. Ask for Catalog A (DragScrapers). Sauerman News Nos. 149 and 150 describe the above installations in greater detail.

SAUERMAN BROS. INC. 622 SOUTH 28TH AVENUE • BELLWOOD, ILLINOIS

CRESCENT SCRAPERS • SLACKLINE and TAUTLINE CABLEWAYS • DUROLITE BLOCKS

Equipment You Ought to Know About

Rock Ripper

Manufacturer: American Tractor Equipment Corp., Department EE, 931 San Leandro Blvd., Oakland 3, Calif.

Claims: A "pipeliner" model of ATECO tractor-mounted rock rippers is designed especially for ripping ahead of pipeline trenches.

The hydraulically-operated heavy-duty tool beam carries a single ripper shank in a swing bracket. The shank can "trail" the tractor for easy steering even when ripping at maximum depth.

The free-swinging bracket also lets the replaceable ripper point "hunt" to seek out weak spots in the rock.

The pipeliner rippers are available in two styles—as an attachment for present ATECO rock rippers or as a complete pipeliner ripper assembly. The attachment unit will take 24 or 48-in. shanks (straight or curved). The pipeliner ripper will take shanks to 72-in. ripping depth and is equipped with pusher plate for tandem operation with a booster tractor. Both types are available for all popular heavy-duty crawler tractors and operate successfully in rock, hardpan, caliche, cemented gravel and other hard-to-dig materials.

Flood Light Tower

Manufacturer: Shepherd Machinery Co., Department EE, 3400 S. San Gabriel River Pkwy., Los Angeles 22, Calif.

Claims: The Shepherd M420 portable light tower is a compact lightweight self-contained unit suitable for regular or emergency illumination needs. The light tower is skid-mounted for easy transportation and completely disassembles for moving from job to job.

Power is supplied by a Universal 12S-B gasoline engine. Standard equipment includes five 1,000-watt flood lights with 16-in. reflectors, which are fully adjustable, and four auxiliary power outlets. Flood light height is adjustable from 17 feet to 24 feet.

Cab-Forward Truck

Manufacturer: Mack Trucks, Inc., Department EE, 1355 W. Front St., Plainfield, N. J.

Claims: A new cab-forward type Mack truck is adaptable both for light and heavy hauling in city or over the road.

The new cab-forward model will be produced for use either as four or six-wheel trucks or tractors and will be available with either gasoline or diesel engines. It is the first cab-forward type with set-back front axle capable of accommodating a diesel engine over 200 hp.

It also features a wrap-around windshield of unusual size, permitting an exceptionally wide and deep angle of vision. The windshield contains more

Continued on page 48

"Go ahead, Fester! Show her how your backhoe works."

"I LIKE THEIR MECHANICAL DEPENDABILITY...LIKE THEIR LONG LIFE...LIKE CATERPILLAR DEALER SERVICE..."

B. K. SOBY, vice president and secretary of the John Dieseth Co., Fergus Falls, Minn., amplifies the above by saying of his DW20s and other Caterpillar-built equipment: "They're good all-around machines with high production capacity. They're well-engineered down-to-earth machines that can be depended on to do a good economical job."

MR. SOBY has ample opportunity to prove out his preference for CAT earthmoving equipment on this highway improvement job—U. S. Highway 75 between Madison and Bellington, Minn. Working in hog-wallow type gumbo, two Cat DW20s with matching No. 456 Scrapers are pushloaded by a D9 equipped with No. 9S Bulldozer. The No. 456s are carrying 22 cu. yd. per load on hauls from ¼ to ½ mi. The job involves moving 623,000 cu. yd.—50,000 yd. borrow and the balance general excavation. A Cat No. 12 Motor Grader maintains scraper haul roads.

Now a new DW20 (Series F) Tractor is available. It features a SUPER-TURBO Engine that provides 320 HP (maximum output) . . . 28% torque rise . . . top speed of 35.8 MPH!

The SUPER-TURBO incorporates a new concept in diesel engine turbocharging—an air induction system unique in earthmoving machines . . . and another Caterpillar first. This system allows use of more of the Turbocharger's potential than was possible before. Results: twice as much torque rise, higher horsepower, better acceleration and grade-ability. But more important, faster cycles, greater production and more profit—*for you.*

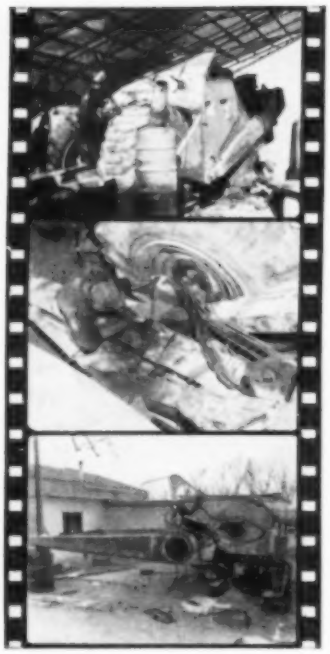
For lowest *total cost* earthmoving machines that give profit production with a minimum of down time—for nearby parts and service you can count on—contact your Caterpillar Dealer. He knows *your* problems, and will show you how Caterpillar equipment can meet them best.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

SUPER-TURBO ENGINE
—First in the Industry
—First in Performance



PROGRESSIVE CONTRACTOR FINDS ARCAIR INDISPENSABLE!

When it comes to maintenance of heavy construction equipment, The Replogle Co. of Circleville, Ohio, counts on Arcair to **cut costly downtime** for overhaul, alterations and repair.

One of Ohio's most progressive contractors, Replogle is using the Arcair torch for all metal removal jobs—veeing out cracks, removing structural welds on damaged members, dressing built-up gear teeth, removing gusset plates—on scrapers, dozers, sheepsfoot tampers, loaders, trucks, shovel buckets, etc.

Replogle likes Arcair for its low heat input, with lack of distortion on alloy steels, and elimination of the need to clean surfaces beforehand.

You'll like Arcair savings too! Basic simplicity—electric arc plus ordinary compressed air—makes Arcair the new, efficient, cost-cutting answer to your metal removal problems.

Write today for complete information!

Arcair Metal Removal Torches

458 S. Mt. Pleasant St., Lancaster, Ohio

New Equipment . . .

Continued from page 46

glass area than ever before used on a vehicle of this class. The driver has maximum vision ahead, to the sides and up and down. Extra-wide doors enclose the steps, protecting them from snow and ice accumulations during winter driving.

The new line, designated the N-Group, is divided into two series. The 40-series, for lighter hauling, registers a maximum gross vehicle weight of 28,000 pounds and a gross combination weight on tractors of 40,000 to 53,000 pounds. The 60-series, for heavier work, has a maximum gross vehicle weight of 30,000 pounds and a gross combination weight rating on tractors of 50,000 to 65,000 pounds.

For fast easy servicing, the vehicle uses the tilting principle in which a spring balance arrangement allows the entire cab to be tilted forward and returned to position by a touch of the hand. Positive safety locks are provided to secure the cab firmly in both raised and bedded position. In tilting the cab, it is unnecessary to disconnect instruments or controls since these are all electrical.

The steering column is provided with a universal joint with the steering gear mounted solidly to the frame. Linkage-type hydraulic power steering is available on all models in this group. The brakes, clutch and transmission are all air-controlled for extra ease of operation. In addition to air brakes, both clutch and gear shift control is by air power.

Other features include dual headlights, a range of transmission covering 5, 10, 15 and 20 speeds, and a choice of either single reduction or dual reduction rear axles. Mack gasoline engines of 150 and 185 hp, and Mack Thermodyne diesels of 170 and 205 hp are featured also in these models.

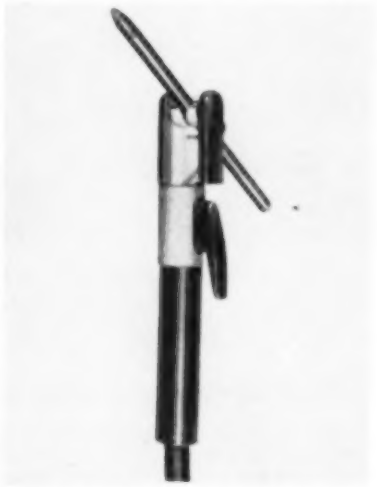
Cutting Torch

Manufacturer: Arcair Co., Department EE, Box 431, Lancaster, Ohio.

Claims: Two new heavy-duty Arcair torch models for metal removal have been developed.

The new torches can be used wherever intricate contouring (model G-55) or large volume (model M-6) metal removal is required.

The model G-55 torch features air jets on both sides of the electrode for increased maneuverability. It is designed for heavy-duty service, using ½-in. and ⅝-in. electrodes only. A distinct improvement on its predecessor G-53 model, the G-55 now has heads insulated with silicone glass laminate, and the air supply can be controlled by rotating the heads.



The Model M-6 torch is designed for extremely heavy-duty applications. Built basically for ¾-in. electrodes, it is also available in ½-in. and ⅝-in. sizes. Electrode angle is permanently fixed, and ample contact area assures high current capacity. A heat shield protects the operator's hand, and the air control is a convenient push-button.

The Arcair process itself is an effective combination of the electric arc and a jet of ordinary compressed air to melt metal and blast it aside. Special "Copperclad" electrodes are generally recommended, however, for arc stability and uniform performance. Because the

Continued on page 51

Tough Job Conditions at Hildebrand Dam Beaten by 100% Bucyrus-Erie Lineup

Hildebrand dam and lock are rising on the Monongahela River in rugged West Virginia mountain country 4½ miles upstream from Morgantown. All excavators and cranes on the project are Bucyrus-Eries. These include a 71-B, a 54-B, two 38-Bs, and a 22-B Transit Crane. All have special jobs to perform; all are doing them well.

Hildebrand Contractors, a joint venture of J. A. Jones Construction Co., Charlotte, N.C., and Charles H. Tompkins Co., Washington, D. C., will complete the 3-yr. project in July, 1959. The lock will have a usable length of 600 feet, a width of 84 feet, and a lift of 21 feet. The dam will be 530 feet long and 70 feet high. These structures will replace two other locks and dams on the Monongahela.

To keep navigation flowing without interruption, the contractor is constructing the dam and lock in four stages behind cofferdams. Despite cramped working quarters and bad weather that held up progress for almost a full season, Hildebrand Contractors are on schedule.

Bucyrus-Erie excavators and cranes will keep your job on schedule, too. Get the facts from your Bucyrus-Erie distributor now.

466E58C

Termed the busiest piece of equipment on the job, this 22-B Transit Crane handles a variety of jobs. These include loading and unloading trucks, hoisting forms into place, and handling steel and forms. The machine is equipped with a 65-ft. boom and 20-ft. jib. Defying steep grades, the 22-B moves quickly to scattered locations at the job site.

BUCYRUS ERIE

A Familiar Sign at Scenes of Progress

BUCYRUS-ERIE COMPANY • SOUTH MILWAUKEE, WISCONSIN

Two 38-Bs cooperate to excavate 4,000 yards of rock and 10,000 yards of common material for dam abutments. One 38-B excavates and loads material onto a barge for a trip across the river. The other, working on the opposite bank, unloads this material into end dumps for hauling to regular dump piles.

Team work is important on the Hildebrand contract. Here, the 54-B with 90-ft. boom sets forms and steel. When not pouring concrete, the 71-B works along with the 54-B on this job. Before it was assigned to this section of the work, the 54-B drove piles for cofferdams.

Like other equipment on the job, the 71-B does double duty. After excavating 300,000 yards of common material and 125,000 yards of rock, it pours the entire bulk concrete load of 130,000 cubic yards. Fitted with a 4-yd. bucket on a 90-ft. boom, the 71-B reaches easily to 65-ft. radius . . . works quickly and surely.

NOTHING **TRANSMITS POWER** IN SO MANY **DIFFERENT** WAYS AS ROEBLING ROYAL BLUE WIRE ROPE. The uses to which Royal Blue is put in today's earth-moving and building construction equipment are extraordinary. The *reasons* why this wire rope enjoys its unique acceptance are equally outstanding: untiring flexibility, shock and abrasion resistance to a spartan degree, and high strength beyond the realm of common wire rope. Collectively, these characteristics give you a wire rope that provides longer service than any you have ever used . . . Royal Blue. For details of the most widely accepted rope in Roebling's history, contact your local distributor or write to Wire Rope Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

ROEBLING

Branch Offices in Principal Cities
Subsidiary of The Colorado Fuel and Iron Corporation

DESIGN
FOR WIRE ROPE
Its ready adaptability is evident wherever power is transmitted. It conforms to unique design requirements. Use wire rope to transmit power.

New Equipment . . .

Continued from page 48

process depends on a physical removal of metal rather than on oxidation, the process works on all metals. On D.C. current, the process cuts, gouges and grooves stainless and manganese steels as easily as mild steel. The process is equally effective on cast iron and copper, as an example of application range, but A. C. current must be used on these.

Dozer, Scraper Cutting Edges

Manufacturer: Caterpillar Tractor Co., Department EE, Peoria, Ill.

Claims: Caterpillar has developed "Hi-Electro" hardened cutting edges to meet the demands of higher horsepowered earthmoving machines and tougher job conditions.

During the life of a bulldozer or scraper, cutting edges must be replaced many times. Whenever replacement occurs, either from wear or breakage, the owner must stand not only the cost of the parts, but the machine down-time and labor expenses as well.

Obstacles such as rocks and boulders give scraper cutting edges a terrific pounding during ram-pack, push loading and high speed bowl braking. Bulldozer edges encounter equally severe conditions.

The ideal cutting edge has three prime qualities, according to Caterpillar. It must be extremely hard to resist wear, strong enough to sustain shock without bending or breaking and it must be thin enough to penetrate materials easily. Cutting edge steel as it comes from the mill does not have these qualities. Only proper heat treatment techniques will create them.

Hi-Electro hardening was selected as the best way of obtaining wearability and strength. The process offers the exacting control needed to produce a super-hard case and retain a tough and shock resistant core. It also allows the edge's projected area to be kept thin enough for good penetration.

The newly developed edges have been tested under actual field conditions at the firm's Peoria (Ill.) proving grounds and on West Coast contractors' jobs.

At a recent proving grounds test production edges were given load-drop trials. A DW21- No. 470 tractor-scraper unit was loaded to capacity, weighed and driven onto concrete pavement. The scraper was equipped with a new Hi-Electro hardened ⅞-in. stinger, selected at random from a production lot. A block formed from four ¾-in. thick steel plates were placed underneath. The weight of the scraper and its load was allowed to crash down to the block from a fully raised position. This process was repeated several times with successive edges from the same lot. Despite the impact sustained

Continued on page 52

"Hogan is a great one with the ladies, but he takes good care of his equipment!"

50% STRONGER
THAN COMMON SHACKLES

CROSBY-LAUGHLIN
Load-Rated* SHACKLES
⅓ TO 75-TON CAPACITIES

Guaranteed capacities are offered by new Crosby-Laughlin* "Load Rated" Shackles that have their safe working load drop forged in the body. Special steels, drop forged—heat treated, plus perfect pin alignment produce quality shackles actually 50% stronger than common shackles, *size for size!* Select from a broad line of round pin, screw and safety shackles in anchor and chain styles . . . be sure you get RED fittings—symbol of *genuine* Crosby-Laughlin "Load Rated" Fittings—it's the world's most complete line. *New catalog* now available from mill supply, construction or industrial equipment distributors. Or write:

*Trademark

CROSBY-LAUGHLIN *Division*
AMERICAN HOIST & DERRICK COMPANY
FT. WAYNE 1, INDIANA

The heavier the load, the harder they grip! —Bucyrus-Erie Rock Grabs

No slings. No drilling. Bucyrus-Erie rock grabs hold loads entirely by solid, strong grip. The heavier the load, the surer the gripping force of the jaws through the multiple-part rope hitch.

Only two men are needed to move big tonnages of quarry rock or rip-rap easily, surely. One operates the crane, the other "sets" the grab.

Bucyrus-Erie rock grabs have plenty of reserve strength, too — are available in five conservatively rated sizes — 2½ to 20 tons. Call your Bucyrus-Erie distributor for the full story.

55R58C

BUCYRUS ERIE

A Familiar Sign at Scenes of Progress

BUCYRUS-ERIE COMPANY • SOUTH MILWAUKEE, WISCONSIN

New Equipment . . .

Continued from page 51

directly on the stingers, none were damaged.

Hi-Electro hardened cutting edges are available from Caterpillar dealers.

Optional Truck Engine

Manufacturer: Euclid Div., Department EE, General Motors Corp., Cleveland 17, Ohio.

Claims: Euclid has announced the availability of a Cummins engine for the 18-ton model R-18 rear dump truck. The Cummins model NH-6-BI engine provides 220 hp and a top loaded travel speed of 26.7 mph.

The model R-18 is equipped with five-speed transmission, 16.00 x 25 drive tires and hydraulic booster steering. Standard body carries 10½ cubic yards. A quarry type body with 11-yd. struck capacity is also available.

Tractor Loader

Manufacturer: Massey-Ferguson Industrial Division, Department EE, 1009 South West St., Wichita, Kan.

Claims: The new Work Bull 1001 multi-purpose tractor loader can be converted into eight different machines easily and quickly—on the job, if necessary—from a loader to street sweeper; back-hoe with its own backfill blade; fork lift; angle dozer; crane; rotary broom; or back to a loader with a scarifier attachment.

Operating the Work Bull 1001, the user can change directions instantly without shifting. He can change speed as well by switching from one foot pedal to the other. Hydraulically-actuated reversing clutches are controlled by a combination accelerator-directional foot pedal.

Maneuverability of the Work Bull 1001 comes from power steering, individually controlled brakes and five-speed transmission in both forward and reverse.

Power is automatically adjusted by a torque converter which provides extra torque where required.

A special nitrogen accumulator cylinder serves as a shock absorber for the hydraulic system when the 1001 is loaded and going over rough terrain. Lift arms may also be set in a "float position" so the attachment will ride with the contour of the terrain.

The Work Bull 1001 loader has a 43° tilt back with 5,200 pounds of breakaway power. Its standard bucket has a 75-in. width with ⅞-cu. yd. payload capacity. The street sweeper attachment has a 63-in. broom with a ¾-cu. yd. dust pan. As a rotary broom, the 1001 sweeps a 96-in. swath with 30° of hydraulic control left and right. Equipped with the Davis 210 backhoe, the unit has its own backfill blade. As a scarifier, the Work Bull rips through rough

Continued on page 56

Where Huge New Stores of Power Will Be Created. One of the great construction jobs of our time is under way at the International Rapids section of the St. Lawrence Seaway project. The magnitude of the task is well illustrated by the view above, which shows work in progress on the Barnhart Island power plant. When completed, the giant installation will straddle the boundary between the United States and Canada, providing vast new stores of power for both nations.

Big gantry cranes have been tireless workers at many key points of the job. To handle the high, unwieldy lifts, they must be rigged with tremendously strong wire rope, and large quantities of Bethlehem Purple Strand have been furnished for the purpose. This tough steel cable, in both the ⅞-in. and 1⅛-in. sizes, has always proved a willing worker, and more than a match for the heavy loads assigned it.

Bethlehem Steel Company, Bethlehem, Pa. On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation.

Mill depots and distributors from coast to coast stock Bethlehem rope for the following industries and numerous others:

CONSTRUCTION • EXCAVATING • MINING • QUARRYING • PETROLEUM • LOGGING • MANUFACTURING

NOT in the Contract

Home after a long tour of duty on a foreign construction job, Smith was most suspicious of his beloved wife's fidelity during his absence. She protested her innocence for a long time but finally broke down and admitted that she had been unfaithful.

"Who was it," the outraged Smith demanded, "that no good roustabout Jones?"

His wife shook her head.

"Was it Brady?" he thundered!

"No," it wasn't Brady.

"Was it Thompson? . . . Morris? . . . Brown?" The irate husband frothed on, but his wife continued to shake her head, "no."

"So!" Smith exploded at last. "None of my friends is good enough for you."

Customer: "Say, waiter, this steak isn't very tender."

Waiter: "If it's affection you're seeking, sir, you'll have to speak to the cashier."

The traveling salesman ran out of gas on a road near the farmer's house, where the only place to sleep was in the bed of the farmer's daughter. So he did.

Early the next morning the farmer rose and went to feed the chickens. The traveling salesman rose, put on his clothes and left. Later in the day the farmer's daughter came home from college for the weekend.

"Sam, you've been drinking for many, many years—why don't you stop?"

"What? And give up something I've got $50,000 invested in!"

After a rather wild date with a charming young lady, her escort, a bit worried, asked:

"Do you tell your mother everything you do?"

She looked up and said:

"Certainly not, Mother doesn't give a darn. It's my husband who's so inquisitive."

"Now tell me," asked the personnel manager, "just why do you want to go to work for us?"

"Well, sir," replied the applicant, "I got sick and went to my doctor. He gave me five pills and told me to take one after each meal. That was three days ago and I still have four pills left."

Two old coon hunters were swapping tall stories about their dogs.

"Why," said one of them, "I had a yaller hound once and every time just before I went hunting I'd whittle out a board in the shape of a coon hide stretcher, just to show him the size of the one I wanted, then I'd set it outside where he could see it. Well, sir, one day my wife set the ironin' board outside and that critter ain't come back yet!"

Joe: "That girl certainly puts on a lot of airs."

Jim: "What do you mean?"

Joe: "Her father is an undertaker down in Georgia and she tells everyone he's a Southern planter."

The boss had to fire an employee but he wanted to be tactful about it. He called him in and said, "Son, I don't know how we're ever going to get along without you, but starting Monday we're going to try."

"Confound you," roared the admiral to his yeoman, "Why don't you be more careful?"

"What do you mean, sir?"

"Why instead of addressing this letter to the Intelligence Officer, you addressed it to the Intelligent Officer. You know there's no such thing in the Navy."

An editor received a story from one of his reporters about the theft of 2,025 pigs from one farmer. Curious about the large number, he phoned the farmer. "Are you the farmer whose pigs were stolen?" he began.

"Yeth, I thure am," replied the farmer.

The editor thanked him, turned back to his desk and rewrote the story about the theft of two sows and 25 pigs.

Harold: "The greatest man who ever lived was Huggins—broadminded, tolerant, generous, temperate, brilliant—yet he died with his talents unsuspected."

Jerry: "How did you manage to find out about him?"

Harold: "I married his widow."

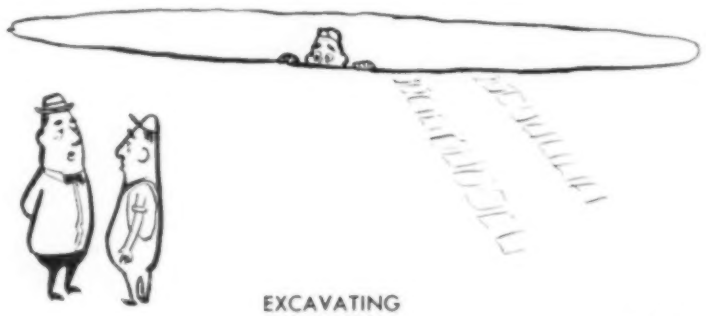
A pretty gal appeared at a party wearing a tiny silver airplane on a chain around her neck. It was a cute ornament and she was not only proud of it but quite conscious of it. She found her dinner partner eyeing her in the direction of the silver trinket and so she asked him by way of starting small talk: "Do you like my little airplane?"

"Yes," replied the young gallant by her side, "but mainly I was admiring the landing field."

Husband: "I bought something today for the one I love best. Guess what."

Wife: "A box of cigars."

Gramps was getting married for the second time. Asked why he was marrying a nifty chorus girl from the city, instead of a woman of his own age, Gramps said, "Well, son, I'd a sight ruther smell perfume than liniment!"



EXCAVATING ENGINEER

LOCH

"Where's the powershovel, Jenkins?"

"A plenty tough job so we called on Caterpillar equipment for this one"

South of Camarillo, Calif., J. E. Haddock, Ltd., is relocating and improving 5 miles of U.S. 101. Some 1½ million cu. yd. of rock are being moved, 7,000 cu. yd. on an average day. Three Caterpillar DW21-Athey PR21 rigs help, carrying 18 cu. yd. apiece. The round trip is a mile, including a 12% grade.

"This job is plenty tough," says Neal E. Saul, project superintendent, "so we called on Caterpillar equipment for this one. Caterpillar gives us satisfactory service with a minimum of down time."

Now Athey PR21 Rear Dump Trailers are powered by *new* Cat DW21 (Series D) Tractors. They feature *new* Super-Turbo Engines that provide 320 HP (maximum output) and twice as much torque rise as before! Results: faster cycles, greater production —*for you*.

Other features, as articulated design and non-stop 90° turns in 33½-ft. diameter, let the DW21-PR21 maneuver in crowded, cramped quarters. Three-stage, double-acting hydraulic rams, 60° tilt and straight body interior permit fast, clean dumping. The PR21 is 14 ft. 1 in. long, 9 ft. wide, allowing fast, easy shovel loading. Below are other Athey trailers suited to construction work.

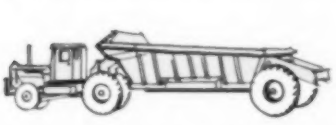
The complete trailer line of Athey is available through your Caterpillar Dealer. Let him demonstrate on *your* job the hauling unit that's best suited to your requirements.

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR

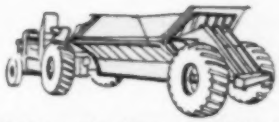
Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

THE ONLY COMPLETE TRACTOR-TRAILER LINE... BY THE LEADERS



DW20-PW20, 40-ton capacity, speeds to 35.8 MPH. Exclusive 3-door, bottom dump design and high arch axle minimize dumping resistance.

"PR" Series — rear dump. Available for the DW21 (above), DW20 (34-ton cap., 23-second dump), DW15 (22-ton cap., speeds to 37.2 MPH, 13-second dump).



"PD" Series — side dump. Available for the DW20 (30-ton cap.) and DW15 (20-ton cap.). Both have 70° dumping angle and can dump on the run.

NEW!

Vibration-free Long-throw FLOOD LIGHT

Model 120-56-300

STURDILITE
Longer life—brighter lighting

Quickly disassembled for maintenance. Spring supported socket assembly locks in place.

STURDILITE stays lit, stays bright, longer than most conventional floodlights. Mounted in an exclusive "floating" suspension, it's as vibration-proof as modern science can make it. And that means less lamp replacement, lower maintenance and better lighting. for you.

Other new, advanced features are: hinged-hood visor with toggle latch for quick opening . . . heavy steel 1-piece spun hood, trunnion mounted for full rotation and universal aim . . . choice of lighting in spot, medium, flood, wide flood and oval beam in 10,000 to 70,000 CP 110-125V 300 watts output. Bonderized and 2-coat enameled. Ready wired. *New literature now ready. Write*

PHOENIX PRODUCTS COMPANY
4723 N. 27th St., Milwaukee 9, Wis.

New Equipment . . .

Continued from page 52

ground. As a fork lift, it lifts 2,500 pounds to 10 feet 5 inches. With the tilt hydraulically controlled, the 1001 angle dozer has a 84-in. high carbon steel blade. With swinging crane, the 1001 has a 2,000-lb. capacity.

High-Tenacity Grease

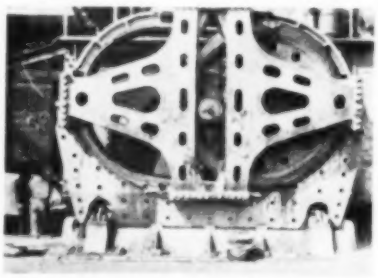
Manufacturer: Keystone Lubricating Co., Department EE, Philadelphia, Pa.

Claims: Keystone 30B heavy lubricant is an extremely tenacious, water-repellent grease with high film strength and other physical properties that make it effective for special purpose applications. It has the ability to withstand the destructive action of high cam pressure produced by the walking action of large stripping draglines.

At an eastern mine a three-day performance test was recently run on a million-pound dragline using the Key-

stone lubricant and another grease. On the walking cam, the dragline's oiler put 10 pounds of the 30B heavy lubricant. On the other, he placed 10 pounds of other grease.

The dragline stripped for three days, moving as required. It then walked about a half-mile to a new location. During the move, the cam with the conventional grease required the constant attention of the oiler who attempted to scoop up and reapply the grease as it was forced out of the cam. In spite of his efforts, he had to apply an additional 40 pounds of grease to the cam.



On the other cam using Keystone lubricant, no additional grease was required and the engineer in charge of the test estimated there was still sufficient grease on the cam for another quarter-mile of travel.

600-Hp. Rubber-Tired Dozer

Manufacturer: Construction Machinery Div., Department EE, Clark Equipment Co., Benton Harbor, Mich.

Claims: Clark has introduced its new 600-hp., 104,000-lb. working weight Michigan model 480 rubber-tired dozer. The machine has just completed field testing on the Illinois tollway project.

Nearly 27 feet long, 14 feet wide and 11 feet eight inches high, the model 480 has a top speed of 28 mph, both forward and reverse. It is powered by a 12-cylinder Cummins turbocharged diesel engine. The 52-ton dozer has four 33.5x 33—26 ply tires.

The Michigan unit has a four-speed power-shift transmission and torque converter drive. No special operator is required. Without foot-clutching, the operator simply moves easy-throw levers to change speed or direction. The operator sits well forward, has a good view of the dozer blade and excellent all-around visibility. The big tires give the operator a smooth ride at any speed, forward or reverse.

The new model has features similar to previous Michigan models—all wheel drive, power steering and planetary-wheel axles. The dozer blade pivots forward and back, tilts side to side and rises up and down—all movements handled hydraulically from the operator's seat.

70-Ton Truck Crane

Manufacturer: Baldwin-Lima-Hamilton Corp., Department EE, Construction Equipment Div., Lima, Ohio.

Claims: A 70-ton capacity four-axle truck crane has been added to the Lima line of construction equipment. The new model, designated the type 84-T, is available mounted on carriers with 8 x 4 and 8 x 6 drives. The crane carrier is designed with high strength T-1 steel in the main frame and frame components. The frame consists of two full box-section main members joined by seven cross members, resulting in high strength and rigidity at reduced weight.

Special features include easily remov-

able "pin-on" type front and rear outrigger boxes; roller-mounted outrigger beams; full length combination deck-fender design; large full vision operator's cab; and full frame width engine compartment. Hydraulic steering and 20-ply, 14:00 x 24 tires are standard.

The upper works feature air control for all motions; fully enclosed pump lubricated deck gears; large clutches and brakes; all main shafting and main cable drums mounted on anti-friction bearings; smooth operating two-shoe type swing clutches; dual boom hoist drums; and one-piece rear counterweight easily removed for weight reduction when traveling on highways.

Various front-end equipment is available, including a special lightweight high strength extra-long crane boom extendible to 190 feet. This boom is constructed with high strength T-1 steel tube chord members with tubular cross bracing. It is available with pin or butt type joints. The 84-T crane is available with gasoline or diesel power plants.

Diesel Engines

Manufacturer: Engine-Material Handling Div., Department EE, Allis-Chalmers Mfg. Co., Milwaukee 1, Wis.

Claims: Two new diesel power units have been added to Allis-Chalmers engine line. They are the 88-hp model D-344 and the 131-hp model D-516 units.

Both engines are designed to serve a wide range of power requirements in construction equipment; for irrigation; in sawmills and crusher plants; in generator sets; and in other applications where heavy-duty general utility power units are adaptable.

The new high-torque engines provide a steady horsepower output at practical working speeds from 1,000 to 1,800 rpm. The D-344 is a 4-cylinder and the D-516 a 6-cylinder engine. The Allis-

Continued on page 68

Owner Gets 20% PAYLOAD BONUS From His MARION!

MFR, 8 to 10 cubic yard body, one-inch oak liner with 3/16" wear plate and three-quarter size cab protector; HD-10S hoist.

FAST OPERATION OF MARION'S HD-10S HOIST HELPS MAKE POSSIBLE EXTRA PAYLOAD TRIPS DAILY

A contract hauler working on the 300-mile Connecticut Thru-Way is realizing extra payload trips daily with his Marion hoist and body. Playing an important part in these daily bonus payloads is Marion's fast operating hoist.

The Marion unit has been on the job every working day for 6 months, hauling blue diamond sand and stone over a rough 10 miles of road. So far, it has outperformed all other units of the same size but of different make in his truck fleet.

In fact, the performance of the Marion has been so outstanding that the contract hauler has placed an order for two more Marion units with HD-10S hoists and MFR 7 to 10 cubic yard extra heavy duty contractor's bodies.

Next time you're shopping for a hoist and dump body that must do a tough job fast and well, check your Marion distributor.

MARION BODIES AND HOISTS

MARION METAL PRODUCTS CO.
MARION, OHIO, U.S.A.

In a Hayward, there's no contact between the closing mechanism and the gravel or other materials handled. To be sure—this "no contact" feature is only one advantage. But a very important one to you—since it means much less wear, reduced upkeep, and a significant dollar-saving in bucket maintenance.

The Hayward Company, 50 Church St., New York 7, N.Y.

HAYWARD BUCKETS

CLAM SHELL • ELECTRIC • ORANGE PEEL • GRAPPLES

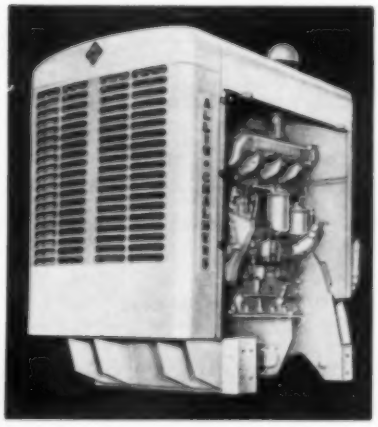
famous for performance since 1888

New Equipment . . .

Continued from page 57

Chalmers follow-through combustion system with its low peak pressures and simplicity of design assures fuel economy and lower operating cost. Full pressure lubrication and thermostatically controlled cooling systems provide smoother, safer operation and longer engine life.

Adding to the operating efficiency of the engines is the 24-volt electrical starter and generator; the single-plunger type, dust-proof and self-lubricating fuel injection pump; simple pintle-type injection nozzles; two large-capacity



fuel filters that protect the fuel pump and nozzles from damaging dirt and water; bypass type thermostats in the forced circulating type cooling system that assure quick warm-up and maintenance of uniform operating temperatures.

The overall width of both the D-344 and the D-516 is 33 inches. Length from radiator to clutch of the D-344 is 64¼ inches and of the D-516 80 $\frac{7}{16}$ inches. Height to top of radiator of the D-344 is 51⅜ inches, and for the D-516 51⅞ inches. Both units are available in either closed or open type models.

The basic engine assemblies have been field proved through extensive use in the Allis-Chalmers HD-6 and HD-11 diesel-powered crawler tractors.

Snatch Block

Manufacturer: Crosby-Laughlin Div., Department EE, American Hoist & Derrick Co., Box 570, Fort Wayne, Ind.

Claims: For construction, rigging and heavy trucking of all kinds, a new Lebus heavy-duty snatch block offers a fast, easy method of opening without the use of tools. A few hand turns of the yoke pin opens one side plate for easy placement of rope on the sheave. When closed, the yoke pin locks to prevent accidental opening by rope vibration or shock loads.

Made of high carbon and alloy steels, each part of the Lebus snatch block is drop-forged and heat-treated to withstand rough use. Available in five sizes, from 8 to 25-ton capacity, it is offered with hook or shackle attachment, or with pin only for tailboard use.

Crawler Drill

Manufacturer: Le Roi Div., Department EE, Westinghouse Air Brake Co., Milwaukee 1, Wis.

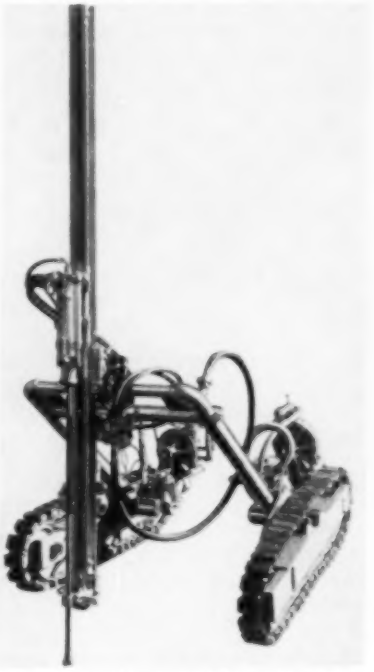
Claims: A new air-powered, crawler-mounted drill rig designed for hard rock drilling is now available from Le Roi. Special U-bar construction and large-size air motors make the LWD-400 Rock Cruiser ideal for heavy drilling in hard-to-get-at places.

Carriage features of the Rock Cruiser include automatic brakes, a geared final drive, spring loaded track takeups, built-in line oiler and life-time lubrication. The feed shell has an air motor feed, a choice of control valves location and a standard 10-ft. feed travel. Drills are available in 3⅛, 3½ or 4-in. sizes.

The U-bar construction provides drilling flexibility through a 105° vertical boom arc. The drill feed can be placed in a flat position on the ground for toe hole drilling; in a horizontal position 7 feet above the ground for breast hole drilling; or in vertical position for down hole drilling. Complete independent movement of each track is obtained by hydraulically controlled track oscillation.

Tracks have rubber cleats, giving the best traction on all types of surfaces, and each is powered by a rugged dependable 7½-hp air motor. These large motors are capable of pulling large compressors over rough terrain.

The feed is powered by an air motor of double lobe construction; a seven-blade rotor provides alternate power



from opposed power lobes. This produces 14 power impulses during each revolution of the motor. Immediate air pressure from blade to the exhaust assures high torque from the smooth running motor. A chain take-up adjustment provides smooth feed throughout drilling operations. The 10-ft. feed travel allows 8-ft. steel changes; optional feeds allow steel changes up to 18 feet.

Available drills include the 3⅛-in. H23DR, the 3½-in. D25DR and the 4-in. D14DR. The latter is recommended with the DR40 feed.

Carriage length with the boom horizontal is 8 feet 6 inches. With the boom vertical it is 7 feet 3 inches high. Track length is 6 feet, while unit width is 6 feet 6 inches. A 2-ft. 8-in. clearance is provided through the center of the unit. Weight of the Rock Cruiser, with the DR40 feed and the D14DR drill, is 3,750 pounds. Tramming speed is 3 mph.

TONS FOR PENNIES

Four-yard bites, fast cycle time made faster by electric swing and the power and strength for the toughest digging enable the Marion 111-M to move tons for pennies. Now bigger, stronger and better than ever, the 111-M is proving this on hundreds of jobs all over the world, including this New England toll road project. Look for the 111-M in mines, quarries and heavy construction everywhere. Ask your Marion Distributor for complete information.

You get **MORE** *with* **MARION**

TODAY'S MARIONS GIVE YOU MORE IN SUSTAINED, LOW-COST PERFORMANCE

MACHINE	Shovel Capacity	AVAILABLE AS			
		Hoe	Crawler Crane	Truck Crane	Special Crane
35-M	¾	Yes	Yes	Yes	—
43-M	1	Yes	Yes	Yes	—
362	1½	Yes	Yes	—	Yes
93-M	2½	Yes	Yes	—	Yes
101-M	3	—	Yes	—	—
111-M	4	—	Yes	—	—

MARION POWER SHOVEL CO. • MARION, OHIO

A Division of Universal Marion Corporation

Send me information about MARION _____ yard shovels, _____ yard hoes and _____ ton cranes (☐ crawler mounted ☐ truck mounted).

☐ Have a salesman call.

Name _____ Title _____

Company _____

Street _____

City _____ Zone _____ State _____

EX-LAFFS by HANK ROESLER

"MECHANIZATION! MECHANIZATION! - WHERE WILL IT ALL END?"

"I LOVE THE WIDE, OPEN SPACES! - DON'T YOU?"

EXCAVATING ENGINEER

"FESTER IS SO WONDERFUL. - HE SHOWERS ME WITH GIFTS!"

"SORRY! - THAT WASN'T THE CIGARETTE LIGHTER!"

"COME PAY DAY, - SHE SHAKES THE OLD MAN DOWN FOR EVERY LAST CENT."

"HIS SELF-WINDING WATCH IS BADLY RUN DOWN."

Shovel clean-up is only one of many jobs Tournatractor handles at Festus, Mo. for Aubuchon Silica Mining Division of Portage-Manley Sand Co. Working in extremely abrasive sand, and across uneven hard rock floors, has been no problem and maintenance costs have been very low.

How Aubuchon keeps ahead of tight production schedules

. . . cuts costs on tractor maintenance

Pit shovel, to wash plant, to rail car — in an hour. That's a normal scheduling at Aubuchon Silica Mining Division, Festus, Mo. Owned by Portage-Manley Sand & Gravel Co., Rockton, Ill., the firm ships many carloads a week of fine silica used in foundry cores and crystal glass.

Aubuchon does no stockpiling, depends on steady production to fill orders. Extended downtime on any machine, therefore, could halt shipments. One of the major availability problems is that of the pit tractor. Servicing the stripping and clean-up operations over the entire pit and plant area, this machine must continuously cross rough, rocky areas . . . working in silica so fine and hard it's been described as "sharp as grinding compound".

"Tournatractor® only machine that can do our tractor work . . ."

Since 1952, Aubuchon Silica Mining's tractor jobs have been handled by a rubber-tired LeTourneau-Westinghouse Tournatractor. As Plant Manager Ira Kent says: "The abrasion, rough going, and back-and-forth travel is too rough for crawlers. Tournatractor is the *only* machine we've seen that can do our tractor work."

Tournatractor's main assignments at this pit are stripping overburden to expose new sandstone, and cleaning up around shovels. But its rubber-tired mounting, sealed anti-friction drive, speed and "go-anywhere" ability let it take on a full circuit of haul-road building and maintenance, stripping, shovel and general clean-up dozing at the pit, mill, and yards.

Maintenance now no problem

How has Tournatractor stood up under conditions so tough? Let Manager Kent tell it: "The last crawler we had was junk inside of 11 months. We've worked Tournatractor 45 hours a week for almost 5 years, *with no real trouble*. On our rough hard rock floors and with free silica sand all over, that's something!

"Our one and only major repair expense in all that time has been replacement of the torque-converter oil-seal and bearings. We've never done anything to the engine . . . never broke an axle, chipped a gear, or had a single major thing go wrong!"

Ask for a demonstration

Tournatractor has minimized maintenance problems for Aubuchon Silica Mining, while doing a lot of work quickly, efficiently. Investigate now what it can do at *your* pit. Let us send you full facts and arrange for an on-the-job demonstration. No obligation!

Tournatractor has plenty of power to doze rocks too big for pit shovel. Big, rubber-tired machine also cleans up fast to let drilling crew set next charges earlier.

Stripping overburden, Tournatractor slot-dozes — using walls of slot as "natural sideboards". Method keeps dirt from spilling off edge of blade for bigger loads with same effort. "Fill-in" jobs like this keep Tournatractor busy the year 'round.

CT-1500-M-1

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

FOR 50 YEARS...
Finest in the Field!
Rely on the bucket contractors rely on. The Omaha Dragline Bucket gives full load with every cast. Perfect balance makes it easy to spot dump. Alloy steel cutting teeth stay sharp, tough and ready. Strike pay dirt now! Complete information and specifications await your letter.
DRAKE-WILLIAMS MOUNT • OMAHA, NEBR.
OMAHA
DRAGLINE BUCKETS

Ripple Rock . . .

Continued from page 37

struction experts, involved a totally different plan. Instead of trying to place explosives from the surface, it was decided to get at the peaks from underneath. A vertical 570-ft. shaft, 12 x 18 feet, was sunk into Maud Island on the east bank of the narrows. At the 450-ft. level, an 8-ft. square tunnel was driven in solid rock 2,400 feet out under the water. At the end of the main tunnel, one branch was pushed to the base of the north peak, and a second branch reached the base of the south peak. The tunnel took two years to dig.

From these tunnels, a vertical shaft was raised 300 feet up into each peak. From the top of these shafts, a honeycomb of smaller tunnels and coyote holes were drilled out and packed with 30,000 sticks—2,750,000 pounds—of Du Pont Nitramex 2H blasting agent. Nitramex, which comes in 2-ft. lengths, is a safer type blasting agent particularly suited for such jobs because of its great strength and water resistance. The blast was half as powerful as that from a small atomic bomb, but officials treated it like a nuclear test explosion.

When the blast was triggered, more than 38 feet were knocked off the tops of the two peaks and over 300,000 tons of rock blasted away to give a safety margin of about 47 feet above the remaining rock at mean low tide. The objective had been 40 feet.

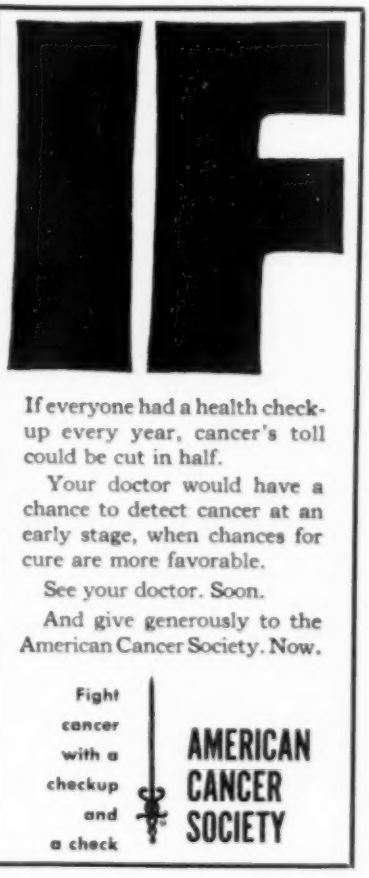
Royal Canadian mounted police cleared about 75 residents from a 26 square mile area around the blast site. All roads leading to the area were blocked off, and residents of Campbell River, the nearest community some 10 miles away, opened all windows in buildings to prevent possible shattering from concussion. Shipping and planes were kept at a 3-mile distance, and the Canadian navy shooed away all strays.

As count-down for the historic blast began, seismographic experts in western Canada huddled over instruments to record the resulting shock waves and any new information about the formation of the earth's crust. These seismic measurements formed part of Canada's contribution to the International Geophysical Year.

The blast exceeded the largest previous non-atomic explosion which took place in January 1957, at Promontory Point, Utah. In that blast 2,138,000 pounds of less powerful explosives were detonated to blast rock for a railroad fill across Great Salt Lake. (See *Excavating Engineer*, September 1957.)

The Ripple Rock project was directed by Dr. Victor Dolmage and Edward E. Mason of Vancouver, B. C., who were employed as consultants by the Canadian government. Actual construction work, including the tunnels and shafts and loading the explosives, was handled by the Northern Construction Co. and J. W. Steward, Ltd., of Vancouver. The Du Pont Co. of Canada, Ltd. supplied the Nitramex blasting agent as well as advice and assistance on the technical problems involved.

Ferdinand D. Bickel, blasting expert in Du Pont's explosives department, said the job was one of the most difficult and challenging commercial blasts ever undertaken. "The big problem," he said, "was to throw the rock to the sides and overcome the tremendous resistance of the water so dredging wouldn't be necessary. The peaks were loaded with about eight times the normal charge for underwater blasting, so that we could throw the rock where we wanted it."


IF
If everyone had a health checkup every year, cancer's toll could be cut in half.
Your doctor would have a chance to detect cancer at an early stage, when chances for cure are more favorable.
See your doctor. Soon.
And give generously to the American Cancer Society. Now.
Fight cancer with a checkup and a check
AMERICAN CANCER SOCIETY

Why you need grader GO-*power*

Adams* 8-speed constant-mesh transmission gives you more full-power speeds for grading, maneuvering, traveling

It's just common sense: The faster your grader works... the more jobs it completes... the lower your grading costs. That's why LeTourneau-Westinghouse equips every 80 to 150 hp Adams grader with a transmission that gives you 8 forward speeds, 4 reverse, plus 3 (optional) creeper speeds. You get the extra GO-*power* of 15 full-power speeds... so your operator can apply maximum grader power on almost every work, maneuver, or travel operation. Here's how it pays off:

Up to 28% extra blade-work

For the ordinary run of grading jobs, these heavy-duty Adams graders have 4 efficient work speeds... compared to only 3 on most other graders. With more speeds at which maximum engine horsepower can be used, Adams machines move more dirt... produce more work in a day's time.

For example — on average grading work, a 115 hp Adams 440 works in third gear (4.6 mph). Other graders of similar size, not having this extra power-speed combination, have to shift down to 3.6 to 4.0 mph. That's because their third gear is much too fast, and less powerful. On such a job, the Adams does up to 28% more work. It will give you similar extra output on almost any task you can name.

Adams 2 intermediate speeds — around 10 and 14 mph — give added speed for maneuvering, and climbing tough grades. Practical travel speeds to 25 mph move these high-production graders quickly from job-to-job.

Bonus output on one-way work

Most graders have only 2 reverse gears, to 7 mph. Adams 80 to 150 hp machines have 4... 2 for blading, 2 for fast back-up. Again, you get more blade-work done with more speeds. Often your operator works a section where it's impractical or impossible to make turn-arounds... so he backs-up. Adams higher reverse travel speeds (8 to 13 mph) get grader back to its starting point fast... convert otherwise wasted reverse travel time to bonus blade-work. On average shuttle-grading jobs, where graders may work at similar speed, an Adams with 13 mph reverse, makes 5 blading cycles in the time it takes other machines (top reverse about 7.0 mph) to make 4.

Faster completion with extra power... precise control

Adams optional creeper gears provide 3 full-power operating speeds *as low as 35' per min.* These low-low speeds give you work-power to take a big cut while blading slowly... concentrate full engine horsepower for scarifying old roadways and blading thru rocks, roots, etc.... help you prepare precise finish grades... save time when working and maneuvering in close quarters.

Added work-power is FREE

Adams graders cost no more than other graders of similar size and power. Whether you need 80, 115, 123, or 150 hp, you get the extra work-power of Adams 12 standard speeds — in constant-mesh transmission — *without extra charge.* Creeper gears are optional, at nominal cost.

Call or write for details, and a demonstration of GO-*power* in action.

*Trademark G-1460-G-1

With 4 reverse speeds to 13 mph, Adams heavy-duty graders back-up fast... complete upwards of 27% more round-trip work-cycles on one-way blade-work, than other similar-size machines.

Extra GO-power

Adams POWER-*Flow** *660* gives you the effective push-power of an *infinite number* of gear ratios, at speeds from 0.0 to 27.4 mph. Heavy-duty grader applies 190 hp thru 3-to-1 torque converter. Working weight: 30,200 lbs.

Medium-weight GO-power

15,500-lb., *60 hp Model 220* has available 10 full-power speeds... leads its size-class with 5 forward, 1 reverse, 4 optional creeper speeds.

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

New Trade Literature

Subject: **Diesel Engines**

Content: What diesel engine users should know and look for when selecting engine fuel is outlined in a 16-page illustrated Detroit Diesel booklet. Entitled *Fuel Oil and High-RPM Diesel Engines*, the booklet applies to all makes of diesels which operate between 1,200 and 3,000 rpm and are used in such applications as trucks, earthmoving equipment, pumps, air compressors and generator sets. The booklet points out the effects of various grades of fuel on diesel engine life and performance. It includes a fuel selection chart to assist engine owners and operators in selecting the type of fuel that will result in the most satisfactory operation of their engines.

Where to get: GM Diesel distributors and dealers or Detroit Diesel Engine Div., Department EE, General Motors Corp., Detroit 28, Mich.

Subject: **Compactor**

Content: A 24-page bulletin illustrates features of the Seaman-Gunnison Duo-Pactor. The unit is designed for compaction by multiple wheel pneumatic rollers followed by a steel roll. Diagrams and photos show how the rubber tires form compacted ruts and loose ridges on the first pass; then, on the second pass, the steel roll is lowered to exert high pressure forcing the ridged material down between the sidewalls of the compacted tire tracks. Also described in the bulletin are impact rolls available for use with the Duo-Pactor and various prime movers for the unit. Ask for form 12.

Where to get: Seaman-Gunnison Corp., Department EE, 2763 S. 27th St., Milwaukee 15, Wis.

Subject: **Twin-Power Scraper**

Content: *Designed for a New Era in Earthmoving* is the title of a new 24-page catalog featuring the model TS-24 Euclid "Twin" Scraper. Illustrated with cut-a-way views and diagrams of major components as well as "at work" pictures from a variety of jobs, the booklet covers all features of design, operation and performance of the 24-yd. (struck) scraper. A special section is devoted to "Twin-Power"—what it is, how it was developed and what it means in terms of increased productive capacity. Ask for form 554.

Where to get: Euclid dealers or from Euclid Div., Department EE, General Motors Corp., Cleveland 17, Ohio.

Subject: **Safety Booklet**

Content: A 16-page booklet outlines the requirements for setting up and enforcing a job-site safety program on construction projects. It tells how to organize a safety committee, how to indoctrinate new employees, what medical arrangements to make, how accidents should be reported and investigated, what fire precautions should be taken and suggests a schedule for safety inspections. Suggestions are given for the use of films, posters and other visual aids to promote safety on the job. It is available without charge.

Where to get: National Constructors Assn., 50 E. 41st St., New York, N. Y.

Subject: **Caterpillar Equipment**

Content: Three new Caterpillar folders are available. *Ripper Report* covers the wide range of uses for tractor-mounted rippers. The brochure pictures the four sizes of tractor-mounted rippers manufactured by Caterpillar as matched equipment for its crawler tractors. Each unit is shown at work on a job with news-type articles and photographs explaining just how the machine was able to assist an owner to faster production. Of special interest is a chart comparing the costs and production differences between blasting and ripping. Ask for form D757. *Attachments* is the second brochure listing many of the prime mover tools offered by Caterpillar. Liberally illustrated, the booklet shows attachments for crawlers, wheel units, Traxcavators and motor graders. A special list is included to help select the proper tool for the particular operation on the job. Ask for form DE754. The third booklet, *The Inspection Door Is Open*, discusses the strenuous demand today's modern diesel engines place on main and connecting rod bearings and reveals why aluminum alloy bearings perform best. Cited in the booklet

are the requirements a bearing must meet before it is finally acceptable for use in a production engine. Ask for form DE701.

Where to get: Caterpillar dealers or Advertising Div., Department EE, Caterpillar Tractor Co., Peoria, Ill.

Subject: **Cable Excavators**

Content: Sauerman sand and gravel installations are described and illustrated in a 22-page booklet. The booklet contains 10 on-the-job reports about Sauerman drag scrapers, tower excavators and slackline cableways. A variety of operations is covered including high banks, long span pits and deep digging under water. Ask for form SG-1.

Where to get: Sauerman Bros., Inc., Department EE, 622 S. 28th Ave., Bellwood, Ill.

New Movies . . .

Subject: **Self-Propelled Excavator**

Content: A 16-mm sound-color film entitled *Run Crane, Run* has been produced by Thew Shovel Co. Running time is 25 minutes. The film highlights design and operating features of the 7-ton, ⅜-yd. self-propelled Lorain SP-107 shovel-crane. The rubber-tired machine is shown as a fully convertible shovel, crane, dragline, clamshell or hoe. The film depicts on-the-job advantages of its four-wheel drive, four-wheel steer carrier getting to and around the job, and its smooth digging and lifting action produced through a hydraulically controlled turntable. Also demonstrated are simultaneous hoist, swing and travel use of the four-wheel steer to "crab" sideways into tight corners.

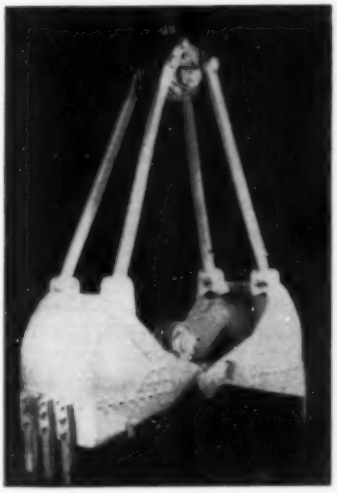
Where to get: Thew Shovel Co., Department EE, Lorain, Ohio.

Subject: **Pipelining**

Content: How the problems of laying a pipeline in rocky country are solved is told in a new Gardner-Denver movie, *Overland Underground*. The 19-minute sound-color film tells how crews battled the unusual terrain found in a gas pipeline's path between Ignacio, Colo., and Moab, Utah. Surface rock along this 160-mile stretch made necessary special construction techniques. Gardner-Denver rock drills and other types of pipeline machinery are shown in operation.

Where to get: Film Library, Department EE, Gardner-Denver Co., Quincy, Ill.

TOUGHEST CUTTING EDGE EVER MADE!



HUTTON Pelican

CLAM SHELL BUCKETS

NEW T-1 FORGED STEEL TEETH AND LIPS—a revolutionary new steel of very high strength that prolongs bucket life.

WELDED CONSTRUCTION—for perfect alignment.

BLOCK AND TACKLE TYPE REEVING—for trouble-free operation.

INTERCHANGEABLE PARTS—on five different sizes.

FREE BULLETIN 757
contains complete information on Hutton Pelican production Clam Shell Buckets.

There's a bucket you can get called Pelican
Whose bowl holds more than any other can
It takes in a bite all the stuff in sight
And you wonder how in the helican!

Write, wire or phone for prompt delivery.

HUTTON FABRICATING MFG. CORP.

2736 East 79th Street • Cleveland 4, Ohio • Telephone: EXpress 1-7432

DISTRIBUTORSHIPS available on exclusive franchise.

Notes from the Manufacturers

American Hoist & Derrick Co., St. Paul, Minn., has appointed Richard J. Mills general sales manager. He will supervise and coordinate the sale of the American line of excavators, truck cranes, hoists and derricks, locomotive and revolver cranes. Mills has been with American Hoist 12 years. Prior to his appointment, he was the firm's eastern district regional sales manager.

Bucyrus-Erie Co., South Milwaukee, Wis., has transferred its drill manufacturing activities from South Milwaukee to its new plant in Richmond, Ind. The parts and tool service section for blast hole drills was moved to Richmond April 1. The blast hole drill sales office will remain in South Milwaukee until July 1. The South Milwaukee plant will discontinue stocking and mounting drills, parts service and bit dressing. It will continue repair service for both drilling and fishing tools. Preliminary manufacturing operations at Richmond have begun. Blast hole drills will be the first machines assembled and water and oil well drills will follow. Eventually, the firm's complete line of drills will be manufactured at Richmond.

Caterpillar Tractor Co., Peoria, Ill., has appointed John Wickstrom mining representative for its sales development division. Wickstrom will specialize in the application of Caterpillar products in underground and open pit coal mining.

Ellicott Machine Corp., Baltimore, Md., has opened a branch office in San Francisco, Calif., at 525 Market St. Charles M. Romanowitz is in charge of sales, engineering and field service offered for dredges of all types. Ro-

Continued on page 68

TO ADVERTISE: All advertising in this section is payable in advance. Rate: $1.00 per line, or $12.00 per inch of 12 lines. Minimum charge $4.00. No discounts; no commissions. Please count your copy carefully to avoid delay. Each line contains 41 characters (34 characters if all capital letters are used). Count spaces and punctuation as one character each. Allow 18 characters for box number, if blind advertisement is desired. Be sure to enclose the correct amount of money with your order. Closing date—10th of preceding month. Example: January closes December 10th.

TO INQUIRE: Be sure to address your inquiry to the advertiser by using the correct box number. Mail your letter in care of Excavating Engineer, South Milwaukee, Wisconsin. Write each advertiser a separate letter. Do not write us for name and address of advertiser. This information will not be given out. We have no information about the equipment advertised other than that shown in the advertisements themselves.

LARGE SHOVELS, CRANES, DRAGLINES — 3 YDS. & UP

For Sale: 200-W Bucyrus-Erie dragline 125' boom—6 yd., Cooper Bessemer Engine. Location: N. W. Pennsylvania—Immediate Possession.

TASA COAL COMPANY
725 Liberty Avenue
Pittsburgh 22, Pa.
Ex. 1-2141

Bucyrus-Erie 120-B dragline, 100' boom with gantry mast, 4' tracks. A-1 condition, located northern California. For sale or lease.

THURMAN & WRIGHT
625 Market Street San Francisco, Calif.

7 yd. Page Walker, perfect condition, new bucket.

SERODINO, INC.
8176 Vine Street
Cincinnati 16, Ohio

2-W Monighan Walking-Type Dragline #492, 85' boom, 2-year old D-13000 Caterpillar diesel engine #4S685, 2-yard Hendrix bucket, 2½ yard Page bucket, some spare parts, fair operating condition. Box 3708

SMALL SHOVELS, CRANES, DRAGLINES—UP TO 2½ YDS.

CRAWLER SHOVELS

Bucyrus-Erie tunnel shovel attachment for 22-B consisting of 14' boom, 12'-10" stick, 1 cu. yd. rock dipper, crowd drum, sprocket and crowd chain.
Excellent condition $2200

Bucyrus-Erie 38-B shovel, 20'-5" dipper stick, 1¼ cu. yd. dipper, powered by International diesel engine. Present condition $28,000
If rebuilt $36,000

Lima model 802, 2 yd. shovel with 36" pads, air controls, powered by a Cat D-17000 diesel engine, with electric starter. Thoroughly rebuilt. Ask for detailed list of replacement parts, as installed.
Guaranteed $38,500

Lorain model L820, 2 yd. combination crane, clamshell and dragline, 50' boom. Rudomatic tagline and fairlead, 35" pads, Waukesha diesel engine.
Rebuilt $32,000

P&H model 255A backhoe, ¾ yd. 26" tracks, diesel engine. Reconditioned $17,000

TRUCK CRANES

Lima Paymaster truck crane, type E34, ¾ yd. 35' boom, powered by 6 cylinder Buda gas engine; mounted on Brockway 6 x 6 truck carrier with ten 12.00 x 24 tires.
Reconditioned $13,000

TRACTORS

Caterpillar D4 diesel tractor, 60" gauge, 16" tracks, with Cat 4S straight hydraulic bulldozer and No. 44 hydraulic control.
Bonded Buy $7500

Allis-Chalmers HD20W diesel tractor w/Garwood bulldozer and DD. P.C.U.
Completely rebuilt $19,500

Caterpillar D8 diesel tractor, with Hi-Output engine, Cat 8S bulldozer and No. 46 hydraulic control. Reconditioned—30 day guarantee.
Bonded Buy $15,500

TRENCHER

Cleveland No. 95 trencher, option 5, 16" buckets, 21½" cut, powered by Continental gasoline engine. Good value $6600

Subject to inspection and prior sale.

H. O. PENN MACHINERY CO. INC.
140th Street & East River CYpress 2-4800
New York 54, N. Y.

SMALL SHOVELS, CRANES, DRAGLINES — UP TO 2½ YDS.

1—Koehring model 303 dragshovel, ¾ yard with Waukesha gas engine, standard crawlers, serial No. 2337. Good condition.

1—Bucyrus-Erie 15-B combination ½ yard dragshovel, shovel, clamshell, dragline. Buda 6 cylinder gasoline engine, electric starter, 20" cats, running boards, s/n 91570. Exceptionally clean shape.

1—Bucyrus-Erie 15-B combination ½ yard shovel and 40' clamshell with 16" cats. Buda gas engine, electric starter, spare rebuilt block. Fair shape, needs work. s/n 45770. Price: $3500.

1—Koehring model 304 extra heavy combination dragshovel, clamshell, dragline, 60' boom. Cat diesel power, maximum counterweight, oversize crawlers, power load lowering. Perfect condition.

1—Lima ¾ yard Paymaster, dragshovel, 35' crane clamshell boom, shovel front. GM 371 diesel power, 22" cats. 10 years old. Excellent condition.

1—Northwest model 25 dragline, clamshell, 40' boom, ¾ yard Page dragline bucket, wide treads, General Motors 371 diesel power. Excellent condition. S/n 10771.

S. M. CHRISTHILF & SON, INC.
Timonium Rd. and Harrisburg Expressway
Timonium, Maryland
Phone VAlley 5-5100

Four (4) Bucyrus-Erie model 54-B Ward Leonard electric shovels each with 28' boom, 18' handle and 2½ yard dipper, for 3 phase, 60 cycle, 2300 volt service, including 5KVA 3300/440 volt auxiliary transformers and 2KVA-32 volt lighting system. Two machines new in April 1941, one March 1942 and one December 1946. Location Minnesota iron range.

PICKANDS MATHER & CO.
700 Sellwood Bldg. Purchasing Dept.
Duluth, Minnesota

Lima model 604, 1½ yd. shovel, S/N 324171 (1949) with 33" wide treads, powered by Cummins engine.
F.O.B. Casper, Wyoming $29,500

Allis-Chalmers HD-9G tractor-loader S/N 2842 (1953) powered by GM 4-71 diesel engine.
F.O.B. Denver, Colorado $11,500

Bucyrus-Erie 22-B dragline, S/N 72619 50' boom, Caterpillar engine, and extra counterweight. Machine completely rebuilt.

Schield Bantam model M-49 S/N 2884 powered by LeRoi gas engine, backhoe, dragline and shovel; mounted on F.W.D. truck. This is a clean machine.
F.O.B. Denver, Colorado $6500

THE COLORADO BUILDERS' SUPPLY CO.
1534 Blake Street
Denver 2, Colorado
Phone: WE 5-3571

Bucyrus-Erie Model 54-B, 2½-yd. shovel, S/N 30010. The Buda diesel engine has been overhauled. The unit is in good condition.
Only $16,600

Northwest Model 80-D, 2½-yd. shovel & dragline, S/N 12504. Has 60' boom & includes dragline bucket. Murphy diesel engine is completely rebuilt $31,500

Bucyrus-Erie Model 22-B shovel, S/N 115332. Has straight boom backhoe attachment & extra heavy dipper. Machine is in excellent condition and good as new $24,500

Northwest Model 25, ¾-yd. with all three front ends, S/N 16806. Has 28" pads. It is in excellent condition $22,500

Call—Wire—Write

LANG CONSTRUCTION EQUIPMENT CO.
P. O. Box 1646 Salt Lake City, Utah
DAvis 8-8341 TWX Number SU-278

SMALL SHOVELS, CRANES, DRAGLINES — UP to 2½ YDS.

1—Lima model 1201 diesel powered shovel—14' long crawlers with 40" manganese steel treads, 28' boom, 18' dipper handle, 3 cu. yd. dipper. Onan Model 3DSP diesel light plant. Power—Caterpillar model D-337F 6 cylinder 5⅛"x6½" diesel engine with Twin Disc Torque Converter. Treads and power unit new in 1957. Machine new in 1951.
Machine serial number 326716.
Approximate weight—217,000 lbs.
Price, loaded on cars, F.O.B. Mt. Iron, Minnesota $33,000

SPARES AVAILABLE FOR ABOVE MACHINE

One—3½ cu. yd. dipper (Poor to fair—can be repaired)
One—3 cu. yd. dipper.
One set—Dipper handles.
Prices of spares, F.O.B. Mt. Iron, Minnesota $4000

1—Bucyrus-Erie model 54-B diesel powered shovel, serial No. 31458. This machine purchased new in 1943. Has 36" wide pads, standard length boom and crawlers, coal burning water heater, 1500 watt Kohler light plant, 5000 lbs. extra counterweight powered with a Buda-Lenova model 6DC1879 engine. Price, loaded on cars, F.O.B. Virginia, Minnesota $22,200

1—Bucyrus-Erie model 37-B diesel powered shovel—dragline combination, serial No. 12225. Standard length shovel boom and crawlers. Power unit—Caterpillar D-13000 diesel engine. Shovel front has 1½ cu. yd. dipper. 50' dragline boom and fairlead. Gasoline powered light plant. Includes spare "Cat" D-13000 diesel engine equipped with clutch and pulley. Price F.O.B. Crosby, Minnesota $8800

1—Bucyrus-Erie 1953 H-3 combination "C" Hydrocrane mounted on army 6 x 6 truck on 7.50 x 20 tires—tires good. New motor about a year old. Truck in good condition. Crane serial No. 101940. Crane has following equipment:
Telescopic boom, counterweighted hook, tandem outriggers, boom carriers and brackets for carrying ¾ yd. Clamshell bucket. Unit #1 operator's steel cab complete; Unit #12—32' boom section complete; telescope 50' to 38'; Unit #45 tagline reel complete. Price, as is, F.O.B. Minneapolis, Minnesota $7,200

WILLIAM H. ZIEGLER CO., INC.
2929 University Avenue S.E.
Minneapolis 14, Minn.

Model 25 Northwest diesel shovel, long tracks, Murphy engine, 2-speed travel; located near Seattle.

Model 25 Northwest diesel shovel and pull shovel, GMC diesel engine; located in Seattle.

38-B Bucyrus-Erie 1½ cu. yd. shovel #83914 with Caterpillar diesel engine, 33" wide treads, located near Seattle.

54-B Bucyrus-Erie 2½ cu. yd. shovel with Cummins diesel engine and torque converter, 36" wide treads. Serial No. 118053.
Machine like new. Used under 900 hours.

Three type "C" LeTourneau-Westinghouse roadster with E-18 Tournarocker.

CLYDE EQUIPMENT COMPANY
3410 First Avenue South
Seattle 4, Washington

FOR SALE: 22-B shovel attach. unused.
22-B Crane Boom.
22-B late style backhoe attachment.
10-B Crane Boom.
15-B unused shovel attachment.
Lorain SP414 Wagon Crane 1952.
N. W. Model 6 Crane or Backhoe.

AIR COMPRESSOR RENTAL CO., INC.
19615 Nottingham Rd.
Cleveland 10, Ohio

SMALL SHOVELS, CRANES, DRAGLINES — UP TO 2½ YDS.

One—Lorain model L85 shovel, serial number 27757, powered by a Caterpillar D337F Turbo charged diesel engine. With Torque converter and tail shaft governor, 24' dipper stick with 2½ yard dipper. This machine was new in July 1956, and is in excellent condition.
F.O.B. Crossville, Tennessee $57,500

One—model LS90 Lorain crane, serial number 2AN860, powered with a Caterpillar D-8800 diesel engine, 60' boom, fairleads, lagging, and 1¼ yard dragline bucket. In top operating condition.
Price F.O.B. Nashville, Tennessee $13,500

One—model LS71 Link Belt combination crane and backhoe, serial number 3-F23, powered with a Caterpillar D318 diesel engine, 50' boom, almost new. This machine is in excellent operating condition.
Price, F.O.B. Nashville, Tennessee $10,500

One—model TL20 Lorain crane, serial number 23240, powered with a Waukesha gasoline engine, 60' boom, fairlead, lagging, and long crawlers. This machine used as a crane only, and in excellent condition.
Price, F.O.B. Nashville, Tennessee $8500

EUCLID-TENNESSEE, INC.
720 Murfreesboro Rd. P. O. Box 1176
Nashville, Tenn.

One Bucyrus-Erie Model 52-B, Ward-Leonard electric shovel, serial no. 11395, equipped for 3 phase, 60 cycle, 440 volt operation; 2¼ cubic yard dipper, 30' boom, 18' handle; equipped with power boom hoist and electric light plant. Well maintained and in good operating condition. Caterpillar units recently overhauled. Located Mid-West. Box 3710

Detachable Gooseneck Lowboy trailer, tandem axle—8:25 x 20 tires—16' x 8' deck. A new trailer, a real buy at $3500.

R. K. McKEE
North Lima, Ohio
Phone: KI 9-3500

1—¾ yd. hydraulic clamshell bucket with 5 bottom teeth and 4 sidecutters, for H-2 Hydrocrane. Price: $200 f.o.b. Cleveland, Ohio.
1—New sprag for H-3 Hydrocrane removed from Hydrohoe #93098. Price $50 f.o.b. Cleveland, Ohio. Write: The W. T. Walsh Equipment Co., 12750 Berea Rd., Cleveland 11, Ohio.

Koehring model 205, s/n 5864, 1948 model with both dragline and backhoe fronts, in good operating condition.
F.O.B. Regina $8500
International W-6 wheel tractor with trailer-mounted P.T.O. driven Hop-To digger.
F.O.B. Regina $2500
Jaeger Air-Plus two-stage 125 C.F.M. air compressor. Completely rebuilt, in excellent condition.
F.O.B. Regina $2350
Barber-Greene model 538 bucket loader with snow and material (Aggregate) flights. In good working condition.
F.O.B. Saskatoon $4500

R. J. FYFE EQUIPMENT LTD.
1148-50 Osler St. Phone: JO 9-3804
Regina, Sask.

Northwest Model 80-D shovel, with ME-6 Murphy diesel engine. Tracks have been rebuilt and the machine has been completely repaired. In good shape, ready to work.
Price $25,000
Caterpillar DW10s in ready-to-go condition. These DW10 tractors carry the No. 10 Cat scrapers of the 1-V series, latest models. We have three (3) of these good units for sale at the low price of each $7500
Cedarapids 1836 Twin-Jaw crusher mounted on skids. This plant has been used only two months and is LIKE NEW $12,500

EUCLID-ARKANSAS, INC.
711 Parker Street
Little Rock, Ark.
Phone: FRanklin 4-4841

38-B dragline s/n 81280 .....$26,000
38-B shovel s/n 112200 .....$25,000
Manitowoc 2000B shovel A-1 s/n 22019..$20,000
Lorain 79 shovel s/n 9471 .....$13,500
80-D N. W. shovel—Rebuilt 6400 series..$25,000
Shovel front 605 Koehring A-1 .....$ 5,000
Shovel front N. W. 6 A-1 .....$ 5,000
Northwest truck crane lifting capacity, 53 ton A-1 condition $44,000

AIR COMPRESSOR RENTAL CO., INC.
19615 Nottingham Road Phone: KE 1-8600
Cleveland 10, Ohio

SMALL SHOVELS, CRANES, DRAGLINES — UP TO 2½ YDS.

Used Bucyrus-Erie 15-B dragline excavator with 30' boom, Cat. diesel engine with electric starter, unit 76 tractor type crawler mounting with 20" wide grousers, unit 79c counterweight. Machine serial number 115288.
Price F.O.B. Greensboro, N. C. $18,500
Used Koehring 205-2A dragline machine with G.M. diesel engine, 35' boom, long wide frames with 24" pads. Machine complete with Hendrix ⅜ yd. TS dragline bucket.
Price F.O.B. Greensboro, N. C. $12,500
Used Allis-Chalmers TS-300 motor scraper with Buda diesel engine, serial number 739.
Price F.O.B. Greensboro, N. C. $10,000
Used Northwest 25 combination dragline, clamshell machine with GM diesel engine, serial number 24941.
Price F.O.B. Greenville, N. C. $12,000

E. F. CRAVEN COMPANY
Greensboro, N. C.

Bucyrus-Erie 22-B, s/n 112992; combination dragshovel, dragline and clamshell. Powered by Caterpillar D-318 engine, 30" pads, 60' boom, 10' jib with pendant supension. Excellent condition. Price $19,250
Bucyrus-Erie 22-B, s/n 77285 equipped as dragshovel. Mounted on specially built wide undercarriage with 26" pads. Powered by an International diesel engine. Price $7500
Bucyrus-Erie 15-B, s/n 115879, equipped as a clamshell, dragline combination, with 35' boom and pendant suspension, 24" pads, gasoline engine. This machine is guaranteed to be in new condition. Price $16,250
Bucyrus-Erie 15-B, s/n 113019, equipped as dragshovel. Mounted on 24" pads, and powered with a Buda gasoline engine. A good machine less than three years old. Price $15,500
Bucyrus-Erie 15-B, s/n 97830, equipped as dragshovel. Mounted on 24" pads, and powered by an International diesel engine. Condition fair. Price $5500
Bucyrus-Erie 15-B, s/n 70996, equipped as dragshovel. Mounted on 24" pads, and powered by an International diesel engine. Condition fair. Price $4500

BEASLEY-HOLMES COMPANY
3020 Reynolds Road Phone: FR 1494
Toledo 6, Ohio

IHC Heil scraper wagon; 11 cu. yd. cap.; 16.00-20 16 ply tires; Ser. #14081; excellent condition. Rochester, N. Y.
IHC TD-14, 142 series crawler tractor; 20" CC track shoes; model 14D2 bulldozer; Ser. #997; excellent condition. Rochester, N. Y.
IHC TD-18, 182 series crawler tractor; 20" CC track shoes; model 18WG B-E bullgrader; Ser. #30421; good condition. Rochester, N. Y.
IHC TD-14, series crawler tractor; 18" overlapping flat shoes; model 14K3A Drott skidshovel; Ser. #41592; excellent condition. Rochester, N. Y.
IHC TD-18, 182 series crawler tractor; 22" track shoes; model 18G2 bullgrader; Ser. #36178; excellent condition. Rochester, N. Y.
IHC TD-9, 91 series crawler tractor; 5 roller; 15" flat shoes; model 9K3 Drott skidshovel; Ser. #63279; excellent condition. Rochester, N. Y.
Unit H-EQ-1 Hydrohoe; 18" wrist action type bucket, mechanical ejectorless hoist rams; side cutters to cut 24"; unit 74 HD 3½" digging ram; new removed from H-3 S.N. 111124 6/16/54. Price: $2100 F.O.B. Buffalo, N. Y.
Trojan LC-100 Loadster; serial #C-112; year 1952; IHC S240 engine; torque converter; 87" bucket, reconditioned. Buffalo, N. Y.
Bucyrus-Erie 22-B dragshovel; W/UD-14A XX IHC engine; ¾ cu. yd. bucket; Ser. #61825; reconditioned; Buffalo, N. Y.
Bucyrus-Erie 22-B dragshovel; W/K-428 Buda engine w/electric start; ¾ cu. yd. bucket; Ser. #73221; reconditioned. Buffalo, N. Y.
General Power shovel; model 310; W/¾ yd. 32" wide bucket; powered by model 525 Buda engine; Ser. #2987; year 1950; reconditioned. Rochester, N. Y.
Lima model 34 backhoe; ¾ yd. bucket; crawler type; 20' cambered boom; GMC 3055-C Diesel engine; Ser. #326916; year 1951; reconditioned. Rochester, N. Y.
Lorain model, TL-25 shovel combination; ¾ yd. shovel and 36" backhoe; crawler type; Cat D-315 Diesel engine; Ser. #19711; year 1950; reconditioned. Buffalo, N. Y.
Erie Strayer model X-02 Clamshell bucket; ¾ yd. capacity; general purpose; teeth and counterweight; (current price: $1760, sale price: $1450.) Buffalo, N. Y.

DOW & COMPANY INC.
1820 Elmwood Avenue
Buffalo 7, New York

SMALL SHOVELS, CRANES, DRAGLINES — UP TO 2½ YDS.

2 yd. model 820 Lorain crane-clam-dragline combination with Cat. D-13000 diesel, swamp Cats 110 flange type boom, fairlead, pressure lubrication. Excellent condition. Available immediately for sale or rental.
1¼ yd. Bucyrus-Erie model 33-B crane-dragline combination 70' boom, independent boom hoist, gas power. Very good condition. Available immediately.
2 yd. model 82 Lorain crane-dragline combination with Cat D-13000 diesel, standard crawlers 70' crane boom pendant suspension, fairlead, new crawlers. A real value at $13,950.
¾ yd. model 55PC P&H truck mounted crane-hoe combination, 6 x 6 carrier. New 1955, excellent condition. Priced to move at $8750. Complete.
1½ yd. model 604 Lima crane-dragline combination, serial number 324167, purchased 1951, Cummins diesel engine, 60' boom, fairlead. Overhauled last winter. Very good condition. Price at job site $32,500.
3 yd. model 1201 Lima, new in 1950. Good working condition, crane-dragline. Priced to sell.

J. P. WAITE COMPANY
P. O. Box 313 3404 W. Pierce St.
Milwaukee 1, Wis. Phone: EV 4-1900

SPECIAL

1957 model 30-B Bucyrus-Erie 35-40 ton capacity Maxi-mounted crane equipped with GMC series 4-71 diesel engine, 50' pin connected boom, pendant suspension, independent propel, oversize 14.00 x 24 tires, extra brakes. Machine has been used approximately three months; like new condition. Available for inspection in Chicago area. Priced $20,000. Below today's replacement cost. A real value! Call Milwaukee EV 4-1900 for appointment to inspect.

J. P. WAITE COMPANY
P. O. Box 313 3404 W. Pierce St.
Milwaukee 1, Wis.

H-3 Hydrocrane S.N. 115855 mounted on 1948 F-8 Ford single axle truck. Price: $13,500. f.o.b. Jacksonville, Texas.

NEWTON-SHANKS
Jacksonville, Texas

Shovel attachment for 54-B Bucyrus-Erie.
Backhoe attachment for 22-B Bucyrus-Erie.
Shovel attachment for 15-B Bucyrus-Erie.
Shovel attachment for 10-B Bucyrus-Erie.
Backhoe attachment for L Insley.

POWER SHOVEL CO.
1600 West McCarty St. Phone: ME 9-1321
Indianapolis 21, Indiana

MISCELLANEOUS EQUIPMENT

FORD MODEL JD-1025 GASOLINE ENGINE with radiator-flywheel, ring gear and starter. $200.

*ALL PRICES—
F.O.B. SOUTH MILWAUKEE, WISCONSIN

BUCYRUS-ERIE COMPANY
South Milwaukee, Wis.

FOR SALE
CONSTRUCTION EQUIPMENT

631 Page Elec. Drag, 200', 8 yd.
9-W Bucyrus-Monighan Elec. Drag, 200', 8 yd.
2400 Lima Dragline, 130', 5 yd.
4500 Manitowoc Drag, 120', 5 yd.
111-M Marion Dragline, 80', 4 yd.
1201 Lima Dragline, 85', 3 yd.
54-B Bucyrus-Erie Drag, 80', 2½ yd.
38-B Bucyrus-Erie Drag, 45', 2 yd.
95 Northwest Drag, 70', 2½ yd.
170-B Bucyrus-Erie 6½ yd. Electric shovel.
150-B Bucyrus-Erie 6 yd. Electric shovel.
120-B Bucyrus-Erie 4 yd. Electric Shovel.
1201 Lima 3½ yd. Standard shovel.
54-B Bucyrus-Erie 2½ yd. Standard shovel.
80-D Northwest 2½ yd. Standard shovel.
25 Northwest ¾ yd. backhoe.
Unit 1020 ¾ yd. shovel.
Also, smaller shovels and draglines.
Euclid trucks—rear and bottom dump.
400 Reich truck mounted rotary air drill.
600 Reich heavy truck mounted rotary air drill.
750 Reich heavy truck mounted rotary air drill.
Shovel, dragline, backhoe attachments.
Buckets and dippers.
Dozers, scrapers, graders, front end loaders.

FRANK SWABB EQUIPMENT CO., INC.
313 Hazleton Nat'l Bank Bldg.
Hazleton, Pa. GLadstone 5-3658

MISCELLANEOUS EQUIPMENT

Model 855 P&H shovel front complete. Nearly new condition $2850
TL-20 Lorain shovel front in new condition. Price $650

VALLEY EQUIPMENT CO.
2611 35th Ave. N.E. Salem, Ore.

6—Allis-Chalmers model TS-360 motor scrapers. Completely rebuilt and guaranteed. Latest design.

D. D. KENNEDY, INC.
P. O. Box 177
Bellwood, Ill.
Chicago-Austin 7-4300
Suburban-Linden 4-5600

3—New, unused, 3 cu. yd. type "BU", Bucyrus-Erie lightweight dragline buckets with all fittings. Weight—5150 pounds each. Special reduced price—$2000 each. F.O.B. Evansville, Indiana.
1—New, unused, 4 cu. yd. type "AX", Bucyrus-Erie medium duty dragline bucket with all fittings. Weight—9100 pounds. Special reduced price—$3850. F.O.B. South Milwaukee, Wis.

BUCYRUS-ERIE COMPANY
South Milwaukee, Wisconsin

Model 27-T blast hole drill, serial No. 18269, Waukesha gasoline power, crawler-mounted, 33' one-piece all-steel derrick complete with tools in good working order. Located in Missouri. Priced to sell. Box 3718

Model 27-T blast hole drill, serial No. 19628, Waukesha gasoline power, crawler-mounted, 33' one-piece all-steel derrick complete with tools in good working order. Located in Missouri. Priced to sell. Box 3719

Type M ½ yd. Owen clam digging bucket teeth, Serial No. 18686 Rud-O-Matic tagline, Mod. 636 both new condition. Price: $1100.

MR. RICHARD GALL
8758 S. Hermitage
Chicago, Illinois

1—Unit 45 tagline reel complete with fittings, hose and guard for H-3 Hydrocrane. Good condition. Price f.o.b. Minneapolis, Minn., $150. Write or call Jim Perkins, Wm. H. Ziegler Co., 2929 University Ave., S.E., Minneapolis 14, Minn. Phone: FRanklin 1-7971.

For Sale: Two shovel attachments complete with 1½ cu. yd. dippers for Bucyrus-Erie Model 38-B. Used approximately 500 hours. Located in Virginia. Price f.o.b. cars each $8500.

For further information write:
BROWNING-FERRIS MACHINERY CO.
P. O. Box 7066 Dallas, Texas

Le Tourneau Super C Tournadozer. Has Buda diesel engine, cab, and cable control unit. Machine is in good condition $5750
Le Tourneau Super C electric Tournapull. Has been through our shop, and has two new tires. Price on application.
Adnun Blacktop Paver, S/N 1462. Has had all necessary repairs $3250
Barber-Greene Finishing machine Model 879A, S/N 49-67. Has been completely rebuilt at a cost of $7941.50 including $4293.50 of new parts. Price $10,500
Multifoote Paver Model 34E, S/N 49078, and Jaeger Concrete finishing machine, S/N 2155. These items have had only little use. Prices and further details on application.
Yale Mobile Electric Crane, model K-42-SH-6-7-78U, 3 ton capacity, 12' to 18' telescopic revolving boom, and solid rubber tires, less battery and battery charger. Government surplus and never been used. Current new price approximately $17,900. Our price only $4750
Buckeye 407 Ladder Type Ditcher, S/N 382. Powered by Chrysler industrial engine 16A. It is in excellent condition $11,400
Cat D-4, S/N 7U 29066 SP, with Austin hydraulic loader and interchangeable dozer blade. Has been used only 300 hours. Good as new. Bargain at $8950

Call—Wire—Write

LANG CONSTRUCTION EQUIPMENT CO.
P. O. Box 1646 Salt Lake City, Utah
DAvis 8-8341 TWX Number SU-278

ONE—2¼-YD. COAL LOADING DIPPER, NEW FOR 38-B. LOCATED NEAR PITTSBURGH. $2500.
BOX 3720

Clamshell bucket, rehandler, slightly used, ⅜ Cu. Yd. Erie Strayer type XLR-38, 2 line, extra light, with counterweight and teeth, weight 1065#. $480.
FOB South Milwaukee, Wis. Box 3732

MISCELLANEOUS EQUIPMENT

1. Caterpillar Model D8 Diesel Tractor, Serial Number 14A-2707, equipped with Caterpillar Model 8S Straight Blade Cable Controlled Bulldozer, Caterpillar Model 25 rear mounted double drum Cable Control Unit, NEW 22" Grouser Tracks, electric starting for gasoline starting system, crankcase guard, track roller guards, steel final drive case, 4H-9510 transmission group. Machine in excellent condition. $22,500
2. Caterpillar Model D8 Diesel Tractor, Serial Number 2U-14843-SP, equipped with Caterpillar Model 24 front mounted single drum Cable Control Unit, Caterpillar Model 8S Straight Blade Bulldozer, lights, electric starting for gasoline starting system, large front idlers, 22" Grouser Tracks. Machine in good operating condition. Good appearance... $12,500
3. Caterpillar Model D7 Diesel Tractor, Serial Number 7M-269, equipped with Caterpillar Model 7S Straight Blade Hydraulic Controlled Bulldozer, Caterpillar Front Mounted Hydraulic Control, excellent 20" Grouser Tracks. $9,500
4. International Model W-9 Wheel Tractor, Serial Number WCB-57639W12B, powered by 47 HP gasoline engine, equipped with 7:50 x 18 front tires, 14:00 x 34 rear tires, with wheel weights, electric starting, swinging drawbar, rear power take-off. Very good condition. $2,500
5. Hough Model HE Rubber Tired Loader, with ¾ cu. yd. bucket, powered by Waukesha gasoline engine, electric starter, 13:00 x 24 rear tires, 7:00 x 20 front tires. The machine has new short block and excellent tires. $3,600
6. Essick Model VR-28W Vibrating Roller, Serial Number U-2924, equipped with 28" wide x 22½" Diameter Rolls, water tank piping, spray bar, Cocoa mats, powered by Wisconsin air cooled gasoline engine, with 2-speed reverse and forward transmission. This Roller was used for demonstration purposes only and is priced to sell. $2,250
7. Caterpillar Model 12 Tandem Drive Diesel Motor Grader, Serial Number 7T-1084, equipped with cab, 14' Blade, power steering, 9:00 x 24 front tires, 13:00 x 24 rear tires. Good operating Condition. $6,950
8. Le Tourneau G6 Cable Operated Scraper, Serial Number 45-65, 6 cu. yd. capacity, equipped with 10:00 x 20 12 ply tires, front and rear. Fair Condition. $1,750

R. L. HARRISON CO., INC.
1801 4th Street, N. W. Phone: 7-8811
Albuquerque, N. Mex.

BALLAST In form of punching, secondary pig iron, steel chunks. Also counter weights. Made to specifications — carload or trailerloads. Shipped anywhere. Contact: D. Balzano.

BEN SADOFF IRON & METAL CO.
Fond du Lac, Wis. WAlnut 1-2070

POSITION WANTED

Experienced bulldozer, high lift, pan, and turnapull operator. Can do repair work. Age 34. Will go anywhere. Have worked in Central America. James Dick, P. O. Box 8, Hurricane, W. Va. Phone: 3473.

HELP WANTED

Superintendent wanted in South-Western Ontario. Should have basic mining or mechanical engineering education or equivalent in actual experience in the operation of open pit limestone or similar type quarry. Should have intimate knowledge of extraction and processing of limestone to multi-size aggregates and be able to operate at a cost figure that would keep the company on better than equal footing in a highly competitive market. Ability to handle personnel also required. Salary to be commensurate with ability and experience. Box 3731.

WANTED TO BUY

Wanted 2½ yd. shovel bucket that can be adapted for use on a 44-Bucyrus-Erie shovel. Send prices and pictures to:

WESTMONT TRACTOR CO.
Box 1445
Missoula, Montana

Notes . . .

Continued from page 65

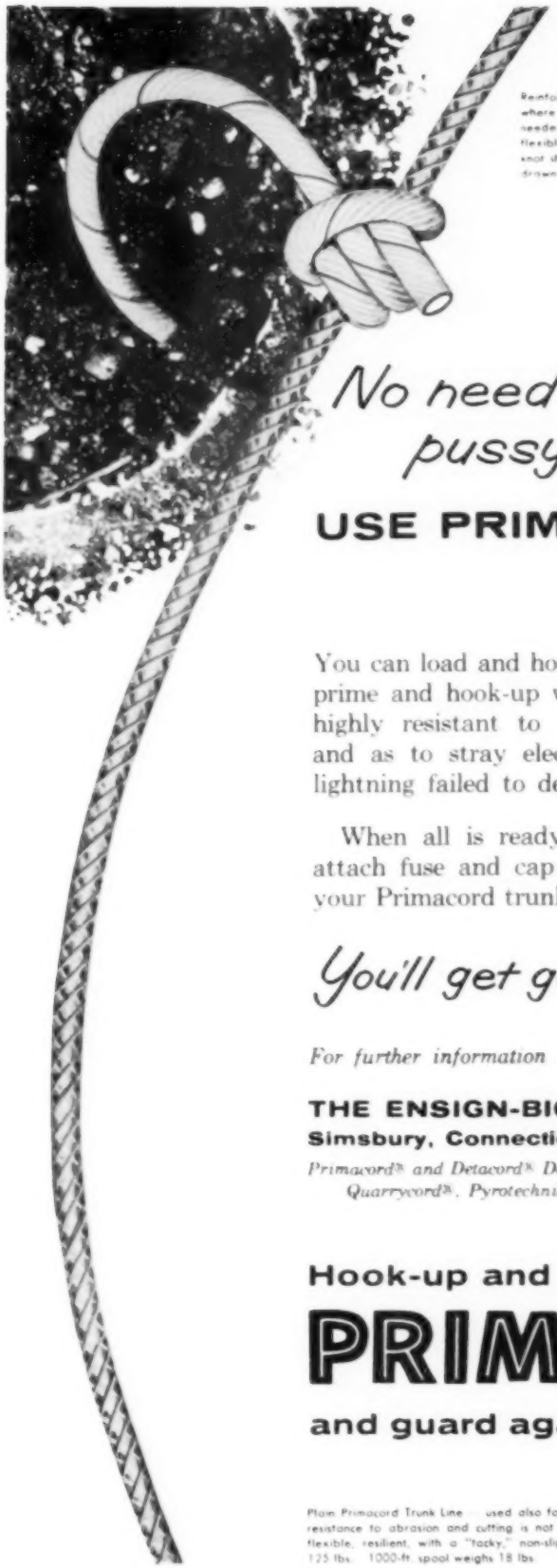
manowitz is well known as an authority on the design and operation for the recovery of heavy minerals, gold, tin, platinum and other ores. He is a past chairman of the San Francisco section of the American Institute of Mining and Metallurgical Engineers.

International Harvester Co., Chicago, Ill., has announced the retirement of John L. McCaffrey, chairman of the board and chief executive officer, after 49 years of service with the company. McCaffrey will continue to serve as a member of the board of directors and its executive committee. Frank W. Jenks, president, is now the chief executive officer of the company. The office of chairman of the board will not be filled. McCaffrey joined International Harvester as a warehouse clerk at the Cincinnati (Ohio) sales office in 1909. He rose steadily through the sales activities of the company, was elected vice president in 1940 and first vice president in 1945. He was elected president in 1946 and served in that office until 1956, when he was elected chairman of the board. He has been a director of the company since 1941.

Leschen Wire Rope Div., H. K. Porter Co., Inc., New York 22, N. Y., is now producing high strength, stress-relieved seven-wire strand for prestressed concrete. New equipment and machinery required for prestress strand has been installed at the Leschen plant in St. Louis, Mo., where a completely new wire mill was put into operation.

When writing advertisers please say you saw it in Excavating Engineer.

Thank You



Reinforced Primacord Branch Line — recommended for deep holes where normal strength and resistance to abrasion and cutting are needed. Textile reinforced (yellow with red thread), tough, resilient, flexible. Tensile strength 160 lbs. 1000-ft spool weighs 19 lbs. The knot shown is the double-wrap half hitch, made in the branch line and drawn tightly around the trunk line.

No need to pussyfoot...

USE PRIMACORD

You can load and hook-up *well ahead* of the blast when you prime and hook-up with Primacord detonating fuse. It is highly resistant to vibration, friction, impact, sparks — and as to stray electrical currents, even a direct hit by lightning failed to detonate Primacord.

When all is ready for the blast — then and then only attach fuse and cap or electric blasting cap to the end of your Primacord trunk line.

You'll get good digging

For further information see your explosives supplier or write to

THE ENSIGN-BICKFORD COMPANY
Simsbury, Connecticut • Since 1836

Primacord® and Detacord®, Detonating Fuse, Safety Fuse, Ignitacord®, Quarrycord®, Pyrotechnical Devices and Blasting Accessories

Hook-up and detonate with

PRIMACORD®

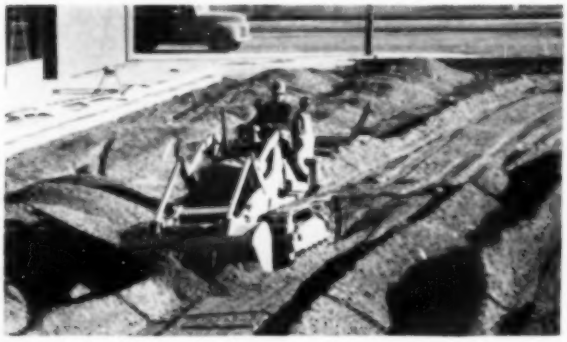
and guard against *Stray Current* hazards

Plain Primacord Trunk Line — used also for shallow holes — wherever resistance to abrasion and cutting is not required. Textile covered, flexible, resilient, with a "tacky," non-slip surface. Tensile strength 125 lbs. 1000-ft spool weighs 18 lbs.

P-c

"The No. 933 TRAXCAVATOR is the only tool for us when we're working in tight corners"

THAT's the word from Deane L. Jensen of Long Construction Company, Inc., Billings, Montana. Operator C. L. Clark agrees. "It's a nice little rig. Handy for an operator because you can do anything with either hand. You can operate the bucket with the right hand and shift with the left. Loading out of a bank, I've loaded as high as 30 cubic yards an hour. I've backfilled in buildings in places so small you had to have the bucket clear up to turn around. Had it in places 24 feet square with a wall all around."



In the pictures on this page you see Mr. Clark and his Cat No. 933 Traxcavator working on a parking lot, street and driveways for the Fair Lane Shopping Center in Billings. The "nice little rig" scoops out dirt for loading onto trucks, spreads gravel for street foundation, dumps trash. 4,500 cubic yards of material were brought here by truck and spread by the No. 933. The Traxcavator sandwiched in this work with other construction jobs in the area for Long Construction Co.

See a demonstration of the No. 933 right on *your* job. Call your Caterpillar Dealer today. And after the demonstration, have him explain how his expert service and factory-quality replacement parts will protect your investment in Cat-built equipment.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

The No. 933 offers a standard bucket of 1 cu. yd. capacity. Also available, as a directly interchangeable attachment, is this new 1¼ cu. yd. *Side Dump Bucket* which dumps to the left as well as forward.

CATERPILLAR

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HARD-WORKING, LONG-LASTING LOADER VERSATILITY